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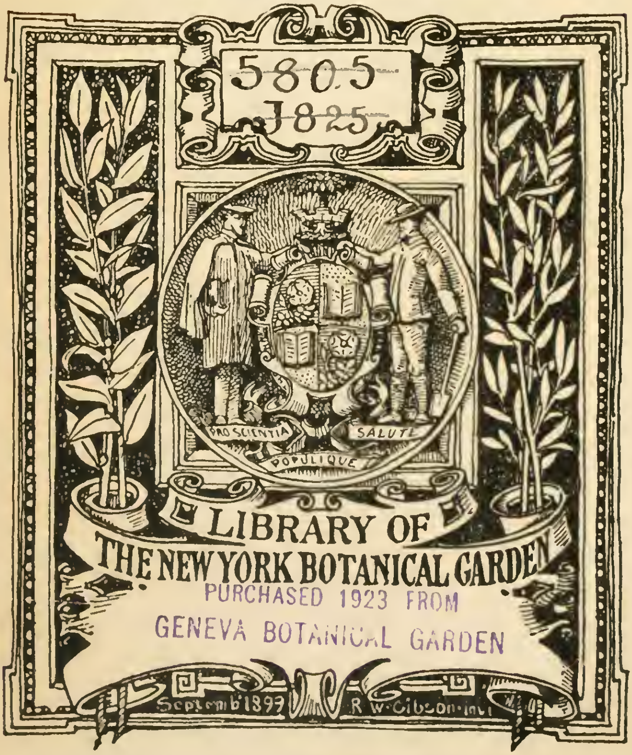
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THE

JOURNAL OF BOTANY,

BRITISH AND FOREIGN.

EDITED BY

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VOL. XXXIII.

ILLUSTRATED WITH PLATES AND CUTS.

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LONDON:
WEST, NEWMAN AND CO., PRINTERS
HATTON GARDEN, E.C.

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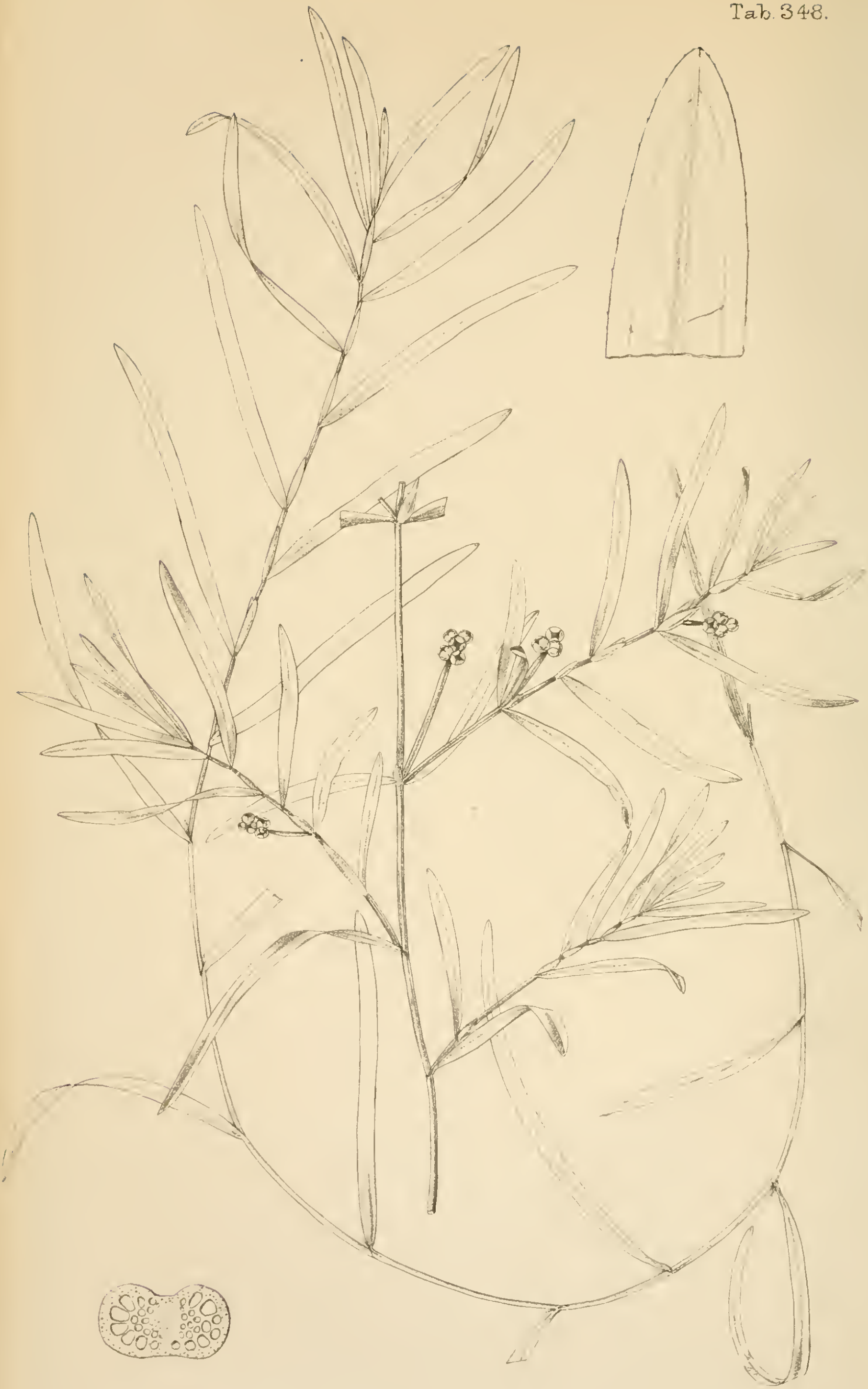

R Morgan lith. Potamogeton Bennettii *Fryer.* West, Newman imp.

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BRITISH AND FOREIGN.

POTAMOGETON BENNETTII.

By Alfred Fryer.

(Plate 348.)

Potamogeton Bennettii mihi. *Rootstock* with slender stolons. Stem very slender, compressed, ascending, simple at first, afterwards dichotomously branched. *Leaves* all similar, sessile, linear, narrowed towards the base, margins obscurely serrulate or entire, 3-ribbed, subapiculate or obtuse, alternate, opposite below the peduncles, spreading. *Stipules* blunt or truncate, scarious. *Peduncles* slender, equal, exceeding the short ovoid spike. *Flowers* abortive. Whole plant dark green, drying with a reddish brown tinge.

Probably a hybrid between *P. crispus* and *P. obtusifolius.* This species has usually been passed over by British botanists as a form of *P. obtusifolius*, which in early growth it closely resembles. In the flowering state the habit is more like that of *P. crispus*, although the plant still retains much of the facies of *obtusifolius;* or, from the short axillary branchlets, that of *Friesii.* The faintly serrulate leaves, however, always serve to distinguish *P. Bennettii* from any of the *Graminifolii*, this character being constantly present in some of the leaves on every branch; although on others it is either absent or so obscure as to be practically useless. When in flower, the peduncles 6–8 times as long as the spike afford a sufficient distinction.

When growing, no botanist would be likely to mistake this plant for *P. crispus*, the species it most closely resembles when carefully examined. The abortive flowers, the narrowly linear often entire leaves, and the numerous axillary branchlets are the safest characters by which the two forms can be separated.

AUG 7 - 1923

In *English Botany* (ed. 3, vol. ix. p. 44), under *P. crispus*, Syme wrote:—"The young state of this plant is the *P. serratus* of Hudson; it is very unlike the ordinary form, and might easily be passed over as *P. obtusifolius*, but the leaves are more or less serrulate. A specimen of the ordinary form gathered late in August had thrown out numerous branches of *P. serratus* from its rootstock, so it cannot be considered as even a variety." In no state of its growth, however, can *P. Bennettii* be mistaken for the *serratus*-state of *P. crispus!* The autumnal and winter shoots of the two forms are totally unlike each other in facies, and in *P. Bennettii* the lower leaves are sessile, not mounted on stipules, as many of them are in *P. crispus*, and are narrowly linear.

Although our plant cannot be placed under the form assumed by Syme to be the *P. serratus* of Hudson, it probably is identical with one described by Regel and Maack as *P. serrulatus*. In the absence of type-specimens I can give no opinion on this matter; but in any case Mr. Bennett tells me that the name *serrulatus* must be abandoned as having been previously used in the genus.

The following description (*Tentamen Floræ Ussuriensis*) accords well with our plant, except that the leaves are there described as 3–5-ribbed, whereas in the British form the leaves seem to be uniformly 3-ribbed only:—

"467. *Potamogeton serrulatus* Rgl. et Maack (?): foliis omnibus submersis, membranaceis, pellucidis, sessilibus, exacte linearibus, obtusis, 3–5-nerviis, margine sub lente argute serrulatis.

"Specimina Maackiana floribus fructibusque carent. Habitus omnino *P. obtusifolii*, folia autem sub lente tenuiter argute serrulata.

"In dem Gebirgsbache Damagu auf der rechten Seite des Sungatschi.

"Wir hielten die vorliegende Art anfänglich für *P. obtusifolius*, von welchem sie sich jedoch gut unterscheidet. Bis aber Exemplare mit Blumen oder Früchten bekannt sind, muss diese Art noch zweifelhaft bleiben, da es immerhin möglich, dass solche auch nur die submerse Form einer andern Art darstellt" (*l. c.* p. 139).

The above might well stand for a description of our British plant in its earlier stages of growth. Now that we are fortunately able to supply the flowering state demanded, the relationship to *P. crispus* becomes evident; but I think it is no less evident that the species is almost equally allied to *P. obtusifolius*. It cannot, however, be referred to either species, and having regard to its structure, habit, and, above all, to the inflorescence, it seems difficult to avoid the conclusion that *P. Bennettii* is a hybrid between *P. crispus* and *P. obtusifolius*.

The merit of the discovery of this most interesting plant in Great Britain is due to Mr. R. Kidston and Col. Stirling, who found it in the early state in 1890 at Grangemouth, Stirlingshire. Following up the clue then obtained, they patiently examined the locality again and again, until perfect specimens rewarded their research. Perhaps it may not be out of place to give extracts from the notes in their herbarium, made by Mr. Bennett and myself before mature examples of the plant had been found, especially as these conflicting opinions well serve to illustrate the diverse and obscure character of the species in its early state.

The first specimens were labelled by Messrs. Kidston and Stirling, "*P. obtusifolius* M. et K. Wood Pond, Grangemouth, R. K. & J. S. S., 17.8.(18)90." On these Mr. Bennett wrote:— "Two specimens of this are both *P. crispus* L.! I expect you will rather demur to this, but it is so! Exactly similar specimens are in Mr. H. C. Watson's herb. at Kew, from Surrey, and named *obtusifolius*,' so you are in good company. Put one of the leaves under a 1 inch, and you will soon see what I mean. *Margin and venation* are *crispus*" (Ar. Bennett *in litt.*, 4.4.1891).

Shortly afterwards these specimens were sent to me; I wrote:—"Is there not hybridity here? If possible, this ought to be re-found and cultivated. I much doubt its being merely *crispus*."

In 1892 the locality was again searched for the new form, but in the first instance apparently without success; one plant, however, amongst the Potamogetons collected in 1892 by Messrs. Kidston and Stirling struck me as being wrongly named; it was labelled, "*P. obtusifolius*, Mert. et Koch. Wood Ponds, Grangemouth, Co. Stirling, 12.6.93, R. K. & J. S. S." This plant was not like the specimens collected in 1890 from the same locality in general appearance, but still looked like *P. obtusifolius* with very faintly serrulate margins.

Respecting these specimens I wrote to Col. Stirling:—"This plant is not *P. obtusifolius*, but is a form of *P. crispus* L. (possibly a hybrid?), and has been named *P. serrulatus*. In Mr. Bennett's extremely valuable 'Notes on Potamogetons' you will find the form noticed: '*P. serrulatus* Regel et Maack (?) (*Tent. Fl. Ussur.* p. 139 (1861)). Habitus omnino *P. obtusifolii*.' This is exactly the plant that has often been named *P. obtusifolius* in Britain; Mr. Watson's herbarium at Kew contains specimens so named by him. The likeness to *obtusifolius* is remarkable, and the error may well be excused. It is, however, a form of *P. crispus* L. (*Journ. Bot.* May, 1893). . . . . Possibly it may be *obtusifolius* × *crispus?* in which case the flower-spikes would be in all probability barren" (A. F. *in litt.*, 31.12.1893).

In the following August an abundant supply of specimens in flower came from Messrs. Kidston and Stirling, and then the true character of the plant became apparent; and I think we are all now agreed in regarding this *Potamogeton* as a hybrid between *crispus* and *obtusifolius*.

I have only to add that the discoverers of this interesting addition to our British Pondweeds heartily concur in its dedication to our friend Mr. Bennett, to whom we all feel personally grateful for the untiring pains he has taken in helping us in our botanical researches. For myself I would like to say many more words of gratitude, but I will spare my friend.

Mr. Morgan's plate gives as good a representation as could possibly be made from the dried specimens at his command. The magnified leaf shows the very faint serrulations which are principally found on the early stem-leaves; this and the magnified section of the stem were drawn from fresh specimens. Before drying, the leaves generally look less acute than those represented in the plate, but this character is variable.

MIMULUS LUTEUS AND SOME OF ITS ALLIES.

By Edward L. Greene.

What plant type, or what aggregate of types, should bear the name *Mimulus luteus* has been discussed at intervals for more than eighty years past. The original to which Linnæus assigned that name had been fully described and neatly figured, as a new *Gratiola* from temperate South America, as early as the year 1714. With its creeping habit, crisp and tender herbage, and not very irregular bright yellow corolla, all so unlike the two rigidly erect plants with strongly bilabiate blue corollas which belong to the flora of eastern North America, and are still the only representatives of typical *Mimulus*—with these strong points of contrast with true *Mimulus* Father Feuillée declined to refer his South American novelty to that genus; and even Linnæus, a half-century afterwards, appears to have done so not without hesitation. Similar opinions have also found expression even in recent times; for it has been more than once suggested that the yellow-flowered Mimuli should be received into the rank of a genus. But the controversy which I wish here to recall bears on the question whether certain plants indigenous to western North America are properly referable to *M. luteus*.

The discoverer of the original yellow *Mimulus* neither made herbarium specimens of it, nor introduced it to the gardens of Europe, and for about a century after the discovery his figure and description were all that stood in evidence of the existence of such a plant in any part of the world. But just before their century cycle had been completed a new flower had appeared in European gardens, which came just near enough answering the requirements of the Feuillean figure and description to give rise to two opinions among botanists, some holding that it was identical with *M. luteus*, others maintaining that it was specifically different; and it may here be observed that they who had cultivated the plant, and knew its exact appearance and whole behaviour, and who had most critically applied to it the terms of the diagnosis of *M. luteus*, were, with one exception, very confident that it was a distinct and new species. This was the opinion of Fischer, who had been the first to raise the plant; of DeCandolle, who had grown it at Montpellier; of Donn, who had raised it in England; and of Loiseleur, who had cultivated it in France. The only botanist who, having specially studied the plant, remained unwilling to adopt for it either of the two names that had been given it as new, and who ventured to call it "*M. luteus*" in one of his superb folios, was the younger Jacquin; and he, as if in order to make his view seem less untenable, had the hardihood to question whether Father Feuillée had not really obtained the original from perhaps Alaska rather than from Chile! For the plant now before botanists, in the living state, had most undoubtedly come from extreme north-western North America, while there remained not the least room for questioning that the original *M. luteus* was indigenous to a region many thousands of miles distant, and in the southern hemisphere.

Besides Jacquin, there was only one other botanist of influence who had maintained the identity of the northern plant with that of the south, and this was Sims, editor of the *Botanical Magazine*. Pursh, who was at that time publishing his *Flora Americæ Septentrionalis*, followed Sims, and called the plant *M. luteus;* though it is possible that he may have known nothing of the fact that DeCandolle had diagnosed it as a new species under the name *M. guttatus*. However this may have been, Pursh's *Flora* was a most useful book, and doubtless, through the wide circulation which it obtained, and the general acceptance which it met with, overbore all the authority of the more critical botanists, whose arguments were not so widely known and read; and caused the wrong opinion, that *M. luteus* is North American, to become the prevailing one.

It was in Lindley's time, if I mistake not, that, at last, the genuine South American *M. luteus* was introduced to European gardens; and this discerning botanist recalled attention to the fact that DeCandolle had early and rightly distinguished the North American from the South American yellow *Mimulus*. But when Bentham, the botanist of the herbarium, addressed himself to the task of writing the *Scrophularineæ* for the *Prodromus*, although he now admitted a number of species of North American yellow Mimuli, he nevertheless reduced the original one to *M. luteus*, thus reasserting the view maintained by Sims, Pursh, and Jacquin, and reversing the judgment of Fischer, DeCandolle, Donn, Loiseleur, Lindley, and many more. This is the easy way of doing, when one has in view a large bundle of herbarium fragments, and lacks time in which to study either living plants or authentic figures, or to read men's reasons for doing differently. And so Asa Gray, in the *Synoptical Flora of North America*, not only copied Bentham's reductions of species, but also himself reduced several *M. luteus* allies which Bentham had maintained as good species.

Up to the time when the *Synoptical Flora* was issued, the very few botanists who had migrated to the north-western parts of North America, or who had travelled there as botanical collectors, seem to have given little or no attention to the plants under consideration; and it was not until 1885 that any contribution to the knowledge of the North American yellow Mimuli was made by a resident of the country which they inhabit.* In his field studies the author of the paper published in 1885 had found the "*M. luteus*" of Asa Gray to be a most extraordinary conglomeration of species. He had included in it annuals of the Californian grain-fields, and perennials of dark forest glades of Oregon; low matted species of the high Sierra Nevada, growing near perpetual snow, and upright branching plants of the low and heated Mexican border; such characters as terete stems and stems sharply quadrangular, and floral leaves distinct and deltoid, or connate into a single and perfectly circular disk, he had not even seen, though his own herbarium exhibited them well at the very time of his writing; nor had he noticed that some species were glabrous, others pubescent, others glaucous;

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* *Bull. Calif. Acad.* i. 106—123.

moreover, the most extreme differences in the form of the calyx in different species had all escaped his notice, and everything was a part of his "*M. luteus*." And thus the only part of the *M. luteus* paragraph in the great volume to which I refer which has any value is the synonymy, for that indicates that a goodly number of authors earlier than Gray had taken more notice of things, and had recognized several species.

One immediate effect of my own endeavour to bring order out of this confusion was that the author of the *Synoptical Flora* at once undertook an examination—perhaps the first careful and serious examination—of his own herbarium materials; and this resulted in the early publication of a Supplement to his volume, in which he presented seven well-defined species in place of the confused and impossible "*M. luteus*" of the body of that work. On new characters of stem, leaf, and calyx, characters first made use of in the California Academy paper, he found it necessary to restore, out of those which he had formerly suppressed, *M. dentatus* Nutt. and *M. Scouleri* Hook., to admit the perfect validity of *M. glaucescens*, *nudatus*, and *nasutus*, which I had named and defined as new, and also to establish a new species of his own out of the same former aggregate, *M. Suksdorfii*. This forced recession from the Benthamian ground concerning *M. luteus*, which Gray up to 1885 had supported, lacked a single step of being complete. He did not know how to distinguish the North American *M. guttatus* DC., but continued to regard that as identical with *M. luteus* of South America.

DeCandolle in 1813 gave six differential characters by which to distinguish his plant from *M. luteus*. One of these, the hairiness of the corolla within, does not hold, for it is common to both. But the other characters are abundantly sufficient, and as I maintained in 1885. But, after all, it is by the forms of the corolla in the two species that we shall find a most unquestionable character. In true *M. luteus* and also in *M. cupreus* and some other South American allies, the corolla has a much narrower tube, and a more regular limb. In the North American plants that come nearest these species the corolla-tube expands quite abruptly into a broad throat, and the lobes of the limb are not only more unequal in size, but they do not spread rotately and evenly; the uppermost pair of lobes are reflexed somewhat after the manner of those of an *Antirrhinum;* the whole corolla thus being very distinctly bilabiate. This same floral character does recur in certain South American species, but not in *M. luteus.* It is also true that quite the even and regular corolla of the South American type is found in certain North American species also, such as *M. moschatus* and *primuloides;* but these are not of the *luteus* group.

In going again over the history of these plants, I have discovered that *M. Langsdorffii* is an older name than *M. guttatus* for the North American type of this group; and there are some new varieties to be proposed.

M. Langsdorffii Donn in Sims, *Bot. Mag.*, under t. 1501, as a synonym of *M. luteus* (Oct. 1812); also Donn, *Cat. Cantab.* 182 (1812). *M. guttatus* DC. *Cat. Monsp.* 127 (1813). *M. luteus* Pursh, *Fl. Am. Sept.* ii. 426 (1814), and Jacqu. f. *Ecl.* i. 137, t. 92 (1816), not Linn. *M. punctatus* Loisel. *Herb. Gen. Amat.* iii. 152 (1819). The figures I have cited are all very beautiful representations of the yellow-flowered *Mimulus* that was the first to appear in the gardens of Europe; and as that of Sims is the earliest of them, I wish to quote, for the benefit of many American botanists in the far West who may not have access to the *Botanical Magazine*, the history which Sims gave of it:—"He [Langsdorff] brought it, we are informed, from Unashka [Unalaska], one of the Fox Islands, and seeds were transmitted to Mr. Hunnemann last spring, and through him to Mr. Donn, curator of the Botanic Garden at Cambridge, who kindly communicated to us in July last the specimen from which our drawing was made, under the name of *Mimulus Langsdorffii*, which we should have adopted, had it proved, as was supposed, a new discovery." It must not be deduced from this that living plants had been brought by Langsdorff from Alaska. He had brought herbarium specimens in mature condition, and out of these Fischer, at Gorenki, had selected ripe seeds from which he had grown the plant for three years before Sims published the species. Nor is it to be inferred that the plant is annual, an assumption that might follow upon Sims' statement that from seeds sown in the spring there were rank specimens in full flower as early as July. In Western America many long-lived perennials, not only in this but other genera, make their first flowering within a few months from the germination of the seed.

To this species I refer as notable varieties all the following forms. They do, indeed, make up a rather polymorphous aggregate; but I do not at present see reason for assigning specific rank to any of them.

Var. GRANDIS. *M. guttatus* var. *grandis* Greene, *Man. Bay-Reg.* 277 (1854). An almost gigantic perennial, inhabiting the margins of streamlets in open ground among the foothills of the coast range in middle California. Geographically it does not connect with typical *M. Langsdorffii*, as far as we know, but is distinguished from it phytographically by its great size, short internodes, ample short-petioled leaves, and dense showy racemes of very large flowers.

Var. INSIGNIS. *M. guttatus* var. *insignis* Greene, *l. c.* Annual. erect, freely branching, with long internodes, scanty foliage, and lax racemes of large flowers, the corolla with abundant dark red spots. A most beautiful plant, apparently confined to certain localities in Central California just to the northward of San Francisco Bay.

Var. *platyphyllus*. Perennial, stoutish, fleshy, simple, less than a foot high, with few leaves and long internodes; leaves 2 or 3 in. long, almost as broad, sessile, round-ovoid, coarsely sinuate-toothed; pedicels few, not equalling the leaves. Collected long ago, on the shores of Nutka Sound, by Barclay.

Var. *argutus*. Smaller than the last, more slender, with short internodes; leaves ovate and deltoid-ovate, mostly sessile, 1 in. long, sharply dentate and denticulate; peduncles exceeding the leaves. Sitka, *Barclay;* also Oregon, *Tolmie, Nuttall*, and others. This and the preceding variety have the habit of true South American *M. luteus;* there being no raceme, but only a few peduncles axillary to the proper foliage, and the stems are short. But the corolla has the ample throat and bilabiate limb which most clearly marks alike all these North American kindred of that species.

Var. TILINGI. *M. Tilingi* Regel, *Gartenfl.* xviii. 321, t. 631 (1869), and xix. 290, t. 665; not of Greene, *Bull. Calif. Acad.* i. 110. Far more slender and less fleshy than the type; also very sparingly leafy, the internodes very long; leaves small, obtuse, more evenly and less deeply toothed, the lower with long petioles, the upper subsessile; raceme not dense. Plant of the widest distribution, occurring from the Sierra Nevada and the Cascades eastwards to the Rocky Mountains, and southward to the Mexican border, though only in the mountainous parts of this vast area, and in moist places. The plant which Asa Gray, and after him myself, mistook for this is a very different one, namely,

M. implexus. *M. Tilingi* Greene, *Bull. Calif. Acad. l. c.* (1885), not of Regel. A low, leafy, few-flowered species which I accurately and quite fully described ten years since, but under a wrong name, as explained above. It usually grows in dense masses among rocks along streamlets, but only in the higher Sierra Nevada of California. It is a most distinct species by its mode of growth. The simple, erect, few-leaved and few-flowered stems arise from an interlaced mass of slender amber-coloured and translucent subterranean rootstocks. No other member of the group makes any approach to it, either in this character or in that of the exceedingly thin membranaceous texture of the leaves. It is but poorly represented in the herbaria, at least as to any showing of its best character, because collectors for the most part take no pains to get the root, but send out a mere stem with leaves and flowers; in which condition it might pass for the variety *argutus* of the preceding species.

M. cæspitosus. *M. Scouleri* var. *cæspitosus* Greene, *Pitt.* ii. 22 (1889). This, like the preceding, inhabits wet rocks along the margins and in the midst of mountain streamlets, and is a northern analogue of *M. implexus*, being confined to the high peaks of Washington, or perhaps extending into Northern Oregon. It is low and matted, but without subterranean rootstocks; the simple mostly 1-flowered upright stems being half-buried in a mass of filiform or almost capillary leafy stolons. It has no special connection with the rare *M. Scouleri;* and the plant which I wrote of as being that species, in the place quoted, is doubtless another variety of *M. Langsdorffii.*

A NEW VICIA FROM TENERIFE.

By the Rev. R. P. Murray, M.A., F.L.S.

Vicia scandens, n. sp. V. glabrescens, caule scandente, intricatissimo, foliis 3–5-jugis, cirrhosis, cirrhis ramosis, foliolis lineari-oblanceolatis vel linearibus, stipulis hirsutis, lanceolatis, plus minus dentatis; pedunculis quam folia longioribus, multifloris; vexillo angusto, alarum longitudine; ovario stipitato; leguminibus latis, compressis, nervosulis, 4–6-spermis.

Perennial? climbing. Stems glabrescent, angular, furrowed, branched. Leaves with 3–5 pairs of leaflets, cirrhose, tendrils branched. Stipules hairy, lanceolate, toothed at the base (semi-hastate), the upper ones broader, sublaciniate towards the tip. Leaflets ½–1½ in., linear-oblanceolate to linear, obtuse, apiculate, very thinly hairy on both sides, shortly stalked. Flowers 4½–6 lines, in a secund raceme. Peduncle usually exceeding the leaf, many- (6–18) flowered. Calyx subcylindric, gibbous at base, thinly hairy. Teeth very unequal; 2 upper very short, broadly triangular; intermediate triangular-acuminate (nearly equalling the tube); lowest subulate, a little exceeding the tube. Corolla cream-coloured; standard only slightly dilated upwards, about equalling the wings, and slightly exceeding the keel. Pod 1 in. 9 lines to 2 in. long, 4 lines broad, stipitate, gradually narrowed to the base, shortly acuminate at the tip, glabrous, reticulate, much compressed, about 5-seeded. Seeds (immature) about 2½ lines in diameter.

The present species differs from *V. cirrhosa* Chr. Sm. in the structure of the calyx (in *V. cirrhosa* the teeth are almost obsolete), and in the much broader and larger pods, which contain larger and fewer seeds; and in other respects. It is, I think, more nearly related to *V. varia* Host, and may possibly be identical with the "*V. dasycarpa* Ten." of the *Phytographia Canariensis*, which Webb once found "in dumetis insulæ Palmæ." I do not know Tenore's plant, but cannot think that the Tenerifan species can be referred to any form of *V. varia*, though the resemblances are certainly striking. One is an annual plant; the other (I believe) perennial: that has a violet standard, this cream-coloured flowers (though I made no note of colour from the fresh plant, and have to trust to memory). More important are the differences in the shape of the upper stipules, and in the characters derived from the pods, which are much longer and less abruptly stipitate in *V. scandens* than in *V. varia*.

The only place where I have seen this plant is the almost precipitous wood fringing the base of the cliffs known as "Los Organos," above Agua Mansa, in the island of Tenerife, at about 4500 ft. above the sea. Here it is extremely luxuriant, and forms one of the greatest ornaments of the vegetation, covering the under-shrubs with a dense mat. It flowers in May and June.

UTRICULARIÆ OF THE MALAY PENINSULA.

By H. N. Ridley, M.A., F.L.S.

The following *Utriculariæ* were collected by myself in the Malay Peninsula during the past six years. The list includes two new species from the mountain districts of Kedah and the Ophir range, where at some altitude these plants are particularly abundant.

Utricularia flexuosa Vahl, *Enum.* i. 198. Common in ditches and ponds. The leaves are used in medicine by the Malays, who call it "Lumut Ekor Kuching" (Cat's-tail Moss), or "Lumut Ekor Kuning" (Yellow-tail Moss). The flowers are bright orange-yellow. —Singapore: Garden Lake; ditches at Ang Mo Kio; Changi. Malacca: rice-fields near Malacca; Selandau. Pahang: Kwala Pahang. Lankawi: in paddy-fields (*Curtis*). Siam: Bangtaphan (*Dr. Keith*).

U. punctata Wall. *Cat.* 2121. Rare. Flowers pale blue.—Pahang: Chenei Lake (*W. Fox*).

U. exoleta Br. *Prodr.* 430. Flowers yellow. With *U. flexuosa*, but much less common.—Singapore: Ang Mo Kio; Garden Lake; ditches, Tanglin.

U. Griffithii Wight, *Icones*, t. 1576. In ditches and swampy spots. Flowers of a beautiful bright purplish blue. — Singapore: Local but abundant in the eastern part of the island; Changi; Tampinis; Bedok; Chua Chu Kang. Malacca: rice-fields, Bukit Sabukor. A stunted form with a rather stouter stem, about 3 in. tall, and a somewhat similar form, occurs also on Mount Ophir.

U. bifida Linn. *Spec.* p. 26. Very common in ditches and shallow sandy runnels. — Singapore: Bukit Timah, &c. Pahang: Kwala Pahang. Malacca: Ayer Panas, &c. Dindings: Lumut; Penang (*Curtis*!). Lankawi (*Curtis*!). There seem to be two forms of this: a small-flowered plain yellow one, and a form with larger flowers, over ¼ in. long, yellow, with a darker orange centre. I found this on sandy heaths at Kwala Pahang, where the common form also grew.

The Utricularias of the *Racemosæ* section are rather difficult to separate. They inhabit wet sandy spots on heaths, usually where water has stood, and it is very difficult to get the leaves, as they have usually perished by the time the flowers come out. What adds to the difficulty is that as several species often grow together, the foliage is mixed, and it is difficult to find which leaves belong to which species.

U. verticillata Benj. in *Linnæa*, xx. 312. *U. bifida* Wight, *Ic.* 1584, 2. A very delicate plant, with distinctly pedicelled pink flowers.—Pahang: Kwala Pahang. Lankawi: paddy-fields (*Curtis*).

U. racemosa Wall. *Cat.* 1496. In all the plants which I have seen the flowers are pure white. It frequents sandy spots where water has lain.—Singapore: Very local, Changi. Malacca: Bukit Sabukor. Pahang: Kwala Pahang. Penang: Waterfall (*Curtis*).

U. ophirensis, n. sp. Herba quam *U. racemosa* Wall. validior, circiter 8 pollicaris. Folia anguste spathulata ¼ pollicis longa obtusa atro-viridia. Bracteæ plures utrinque productæ et acutæ. Flores sæpius pauci, 4–5, in apicem caulis congesti, ferme sessiles. Calyx breviuscula lobis rotundatis orbiculatis obtusis, in fructu punctatis. Corolla $\frac{1}{4}$ pollicis longa, labium superius erectum breve obtusum, inferius majus oblongum obtusum roseum, striis in fauce obscurioribus, calcar quam labium inferius paullo longius porrectum apice curvo. Capsula globosa nutans in calyce inclusa $\frac{1}{10}$ pollicis longa. Semina minima brunnea oblonga irregulariter angulata pustulosa.

In streams on the rocks, Mt. Ophir, Malacca, at 4000 ft. elevation.

Dried specimens of this might be mistaken for stout forms of *U. racemosa* Wall. The flowers, however, are much larger, with a larger lip, and differently coloured; and the seeds are quite distinct.

U. orbiculata Wall. *Cat.* 1500. Flowers white, tinted with pink. In moss on wet rocks.—Malacca, on Mount Ophir, beneath the big rock on the summit! Kedah: Telaga Tujon, in tufts of moss on the edge of the stream (*C. Curtis*).

U. minutissima Vahl, *Enum.* i. 204. Herba minuta capillaris, vix ramosa, 2–4 pollicaris. Bracteæ minutæ ovatæ lanceolatæ, breviter inferne extensæ. Flores minuti brevissime pedicellati læte purpureo-rosei remoti, $\frac{1}{8}$ pollicis longi, circiter 10. Calycis lobi ovati rotundati. Corollæ lobus superior rotundatus, inferior angustus obtusus, calcare acuto porrecto duplo longiore. Capsula minima globosa. Semina obscure scrobiculata oblonga, atro-brunnea.—Damp sandy spots. Pahang: Kwala Pahang! Rumpin River! Malacca: Mount Ophir (4000 ft. elevation)! Ayer Panas!

This most minute plant is distinguished from all by its capillary stem and little bright mauve flowers, with a spur much longer than the lower lip of the corolla. I suppose it to be Vahl's species which was collected by Kœnig in Malacca, though Vahl describes it as having "Corollæ cœruleæ, nectarium longitudine corollæ." The only blue-flowered species I have been able to find in Malacca is *U. affinis* Wight, which is not capillary, and does not otherwise agree. Kœnig's specimens appear not to be extant.

U. Wallichiana Wight, *Icones*, 1572, i. A very slender twining plant, growing among grasses. Flowers very small, lemon-yellow. On Mount Ophir, alt. 4000 ft.

U. involvens, n. sp. Cæspitosa. Folia tenuia spathulata linearia obtusa ultra pollicaria, $\frac{1}{16}$ pollicis lata. Caules circiter pedales, quam ii *U. Wallichianæ* crassiores. Bracteæ lanceolatæ acutæ $\frac{1}{16}$ pollicis longæ, basibus haud productis. Flores magni flavi in pedicellis $\frac{1}{2}$–$\frac{3}{4}$ pollicis longis. Calycis lobi oblongi ovati, ferme $\frac{1}{4}$ pollicis longi. Corollæ labium superius obovatum, inferius rotundatum bilobum $\frac{3}{8}$ pollicis latum. Calcar rectum pendulum acuminatum acutum $\frac{1}{4}$ pollicis longum. Capsula non visa.

Kedah, on Kedah Peak (Gunong Jerai), in streams and wet spots at 3000 ft. altitude.

A very pretty twining species, with the largest flowers of any in this region. It forms mats of leaves on the rocks in the streams, about 6 in. across. The flowers are bright lemon-yellow.

TWO NEW ORCHIDS FROM JAMAICA.

By William Fawcett, B.Sc., F.L.S.

Epidendrum tridentatum, sp. n. *Stem* equal at base, leafy to inflorescence. *Leaves* alternate, oblong or oblong-lanceolate, acute, clasping. *Inflorescence* a raceme or panicle, terminal, nodding; sterile bract none or one, floral bracts awl-shaped. *Flowers* greenish-yellow. *Sepals* spathulate-lanceolate or broadly lanceolate, acute. *Petals* shorter than sepals, spathulate-linear. *Labellum* adnate to column, 3–6-lobed, 2-callous at base; lateral lobes trapezoid-roundish, middle smaller, of 3 triangular lobules.

Habitat. Blue Mountains, Jamaica. *Coll.* W. Harris, April, 1893.

Plant 1½–2 ft. high. Leaf 5–7 in. long, 10–12 lines broad. Sterile bract 6 lines long. Floral bracts 3–5 lines long. Sepals 8–9 lines long.

Pleurothallis uncinata, sp. n. *Stem* biangular, about as long as the leaf, with appressed flaccid sheaths at the nodes. *Leaf* lanceolate, 5 or 6 times as long as the peduncles (8–9 in. long, nearly 2 in. broad). *Peduncles* 1-flowered, solitary or fascicled (2 or 3). *Sepals* oblong-lanceolate, lateral shortly connate at base, sometimes cohering above, externally scabrous, purplish, 7 lines long. *Petals* linear-lanceolate, half as long as sepals, orange-coloured at base, purplish above. *Labellum* as long as petals, indistinctly 3-lobed; lateral lobes almost obsolete, but furnished each with a hook-like process embracing the column; middle lobe oblong, blunt, minutely fimbriate-serrate, purplish.

Habitat. Near Newcastle, Jamaica. *Coll.* W. Harris, June, 1893.

BIBLIOGRAPHICAL NOTES.

VIII.—Jane Colden and the Flora of New York.

While looking up matter for the sketch of William Young (*Journ. Bot.* 1894, 332), I came across two or three references to Miss Colden, another early American botanist whose MS. work is preserved in the British Museum; and I have thought that some account of her may be interesting. The history of her father, Cadwallader Colden, is given at length by Asa Gray in Silliman's *Journal* for 1843,* but his daughter is only referred to by Gray in a footnote, in which he states that she "died unmarried." Gray had access to the "voluminous correspondence" of Colden, and had, it must be supposed, some ground for this assertion, which, however, conflicts with all other accounts. Among Colden's letters is one to Gronovius, dated Oct. 1st, 1755, in which he gives the following account of his daughter's botanical work:—

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* 'Selections from the Scientific Correspondence of Cadwallader Colden with Gronovius, Linnæus, Collinson, and other Naturalists,' *Amer. Journ. Science & Arts*, xliv. 85–133.

> "I have a daughter who has an inclination to reading, and a curiosity for natural philosophy or natural history, and a sufficient capacity for attaining a competent knowledge. I took the pains to explain Linnæus's System, and to put it in an English form for her use, by freeing it from the technical terms, which was easily done by using two or three words in place of one. She is now grown very fond of the study, and has made such a progress in it as I believe would please you if you saw her performance. Though perhaps she could not have been persuaded to learn the terms at first, she now understands in some degree Linnæus's characters, notwithstanding that she does not understand Latin. She has already a pretty large volume in writing, of the descriptions of plants. She was shown a method of taking the impression of the leaves on paper with printer's ink, by a simple kind of rolling press, which is of use in distinguishing the species. No description in words alone can give so clear an idea, as when assisted with a picture. She has the impression of three hundred plants in the manner you'll see by the samples. That you may have some conception of her performance and her manner of describing, I propose to enclose some samples in her own writing, some of which I think are new genus's. One is the *Panax foliis ternis ternatis*, in the Flora Virg. . . . Two more I have not found described any where; and in the others you'll find some things particular, which I think are not taken notice of by any author I have seen. If you think, Sir, that she can be any use to you, she will be extremely pleased at being employed by you, either in sending descriptions, or any seeds you shall desire, or dried specimens of any particular plant you should mention to me. She has time to apply herself to gratify your curiosity more than I ever had; and now when I have time, the infirmities of age disable me."

The "pretty large volume in writing" is now in the Department of Botany in the British Museum. After the writer's death it passed into the hands of F. von Wangenheim, then into those of Godfrey Baldinger, and finally became the property of Banks. An account of the MS. is prefixed by Wangenheim, and a title-page was added by Baldinger, of which the following is a transcript:—

FLORA
NOV.—EBORACENSIS.

Plantas in Solo Natali
collegit, descripsit,
delineavit,
COLDENIA,
Cadwallader Coldens
Filia.

Divitiis Bibliothecæ
Josephi Banks
adiecit
Ern. Godofr. Baldinger,
olim in Acad. Jenensi Prof. Bot.
et Med. Theoret.; in Acad. Gœttingensi
Med. Pract.; in Academia Marburgensi
Ord. Medicor. Prof. Primarius.

Anno 1801.

The prefatory note by Wangenheim is published in the account of the MS. given in Schrader's *Journal für die Botanik* for 1800 (Göttingen, 1801), p. 468. The following is a translation:—

"This MS., which has never been printed, contains a part of the New York Flora, and has been composed by a lady, the daughter of Governor Cadwallader Colden, well known for his botanical works, and also a physician. This lady married a doctor of medicine, Farquer [Farquhar], a Scotchman by birth, and she died soon afterwards. Some of the names are according to her father and according to Gronovius, and some are according to the Brandenburg doctor Schoepff, who has read this work. The trivial names are according to Linnæus.

"This work is a remarkable one because it is that of a lady who possessed such a love for botany that she learned Latin, and judging by its nature is so worthy and correct that it contains many even minute things.

"This is written by F. von Wangenheim,
Captain in the Field-Jäger Corps of the Landgrave of Hesse.
New York, May, 1782."

It will be observed that this narrative contradicts Gray's statement that Jane Colden died unmarried: Pritzel accepts Schrader's account, but adds, "Moriens (1754) Floram manuscriptam Novi Eboraci tabulis ornatam reliquit Wangenheimio." If the MS. was bequeathed to Wangenheim, it is strange that he did not say so: the date given for her death is certainly inaccurate. Wangenheim's statement that she "learned Latin" is contrary to her father's account, but probably only means that she acquired the Latin names of the plants she described; the descriptions in the MS. (to which she gave no title) are all in English.

The actual number of figures is 340: the numbers of the descriptions run to 341, but these are really less numerous, as a good many pages are blank, save for the name of the plant at their head. This suggests that the figures were made before the descriptions; they are very poor, and consist only of leaves.* The descriptions, on the other hand, are excellent—full, careful, and evidently taken from the living specimens. One of these has been published in full (No. 153 of the MS.) in *Essays and Observations*, vol. ii. (Edinburgh, 1770). The plant (*Hypericum virginicum*) to which it refers had been sent her by Alexander Garden, who found it at New York in 1754; in return, Miss Colden sent him the description of the same plant, which she had discovered during the previous summer, and, "using the privilege of a first discoverer, she was pleased to call this new plant *Gardenia*, in compliment to Dr. Garden." Another of her descriptions, translated into Latin, was sent by Ellis to Linnæus in 1758, and is published in the *Correspondence of Linnæus*, i. 94. The plant to which it referred was retained by Linnæus in *Helleborus*, but separated by Salisbury (who has been followed by subsequent botanists) under the name of *Coptis*. Miss Colden (No. 292) called it *Fibraurea*—a translation of the popular name "Gold Thread." Ellis, forwarding the description, says: "This young lady merits your esteem, and does honour to your System. She has drawn and described 400 plants in your method only: she uses English terms. Her father has a plant called after him *Coldenia*, suppose you should call this *Coldenella*, or any other name that might distinguish her among your Genera." Unfortunately Linnæus did not recognise the genus as distinct, so neither of these names was adopted.

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* The figures are merely ink outlines washed in with neutral tint, not the "nature printed" ones mentioned in Colden's letter, of which, however, there is one example at the end of the book.

Little indications in the descriptions show that Miss Colden went among the country folk and noted their names and rustic remedies. Thus of *Pedicularis tuberosa* (No. 41) she says: "The Pedicularis is called by the country people Betony: they make Thee of the Leaves, and use it for the Fever and Ague." *Asclepias tuberosa* is "an excellent cure for the Colick. This was learn'd from a Canada Indian, and is called in New England Canada Root. The Excellency of this Root for the Colick is confirm'd by Dr. Pater of New England, and Dr. Brooks of Maryland likewise confirmed this." The root of *Solidago canadensis* "is used in Carolina for the cure of the Negro Poison"; *Œnothera biennis* is "call'd here by the Country People, Seabedge"; *Malva caroliniana* is "called in South Carolina, Bohea Tea"; and *Gillenia trifoliata* is "call'd here, Ipecacuanha." Occasionally a note shows particular observation, such as this on *Clematis virginiana:* "Neither Linnæus take notice (*sic*) that there are some Plants of the Clematis that bear only Male flowers, but this I have observed with such care, that there can be no doubt of it."

In addition to the extracts already given, other references in the *Correspondence of Linnæus* show that Miss Colden was well known to the botanists of that period. Collinson, writing to Linnæus, May 12, 1756, says she "is perhaps the first lady that has so perfectly studied your system. She ought to be celebrated": and he appears, from other remarks in his letters, to have been anxious that Linnæus should commemorate her. Although he did not do this, he seems to have spoken kindly of her, for Ellis, in a letter somewhat later than the one already quoted, says: "You have plainly shewed me that the *Fibraurea* of Miss Colden is already described. I shall let her know what civil things you say of her—her Christian name is Jane." If Garden's remark in his letter to Ellis, March 25, 1755, is not merely a conventional compliment, she must have been beautiful as well as clever, for he speaks of Colden's "lovely daughter"; unless the present transatlantic use of the word as a general expression of approval prevailed a century ago. She was also a correspondent of John Bartram, from whom a letter to her is published in *Memorials of Bartram*, p. 400, dated Jan. 24, 1757. It is in answer to one from her, of which Bartram says: "I read it several times with agreeable satisfaction; indeed, I am very careful of it, and it keeps company with the choicest correspondence." The letter, however, is unfortunately lost, and, as far as I know, none from her pen are extant. These dates show clearly that the date of death given by Pritzel—1754—is inaccurate, as at that time, and for at least four years later, she was not married. She died, as has already been stated, shortly after her marriage, and of her husband or her married life we know nothing.

James Britten.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from vol. xxxii. p. 342.)

Epipogum aphyllum Sw. Samm. Veg. Scand. 32 (1814). **1854.** Found in 1842 by Mrs. W. Anderton Smith at Tedstone Delamere near Bromyard, Herefordshire.—Hook. Journ. Bot. vi. 318.

Cephalanthera rubra Rich. in Mem. Mus. Par. iv. 60 (1818). **1797.** "Gathered last June on Hampton Common, Gloucestershire, by Mrs. Smith of Barnham House in that neighbourhood."—E. B. 437 (Nov. 1797). But in a letter from the Rev. W. Lloyd Baker to Sowerby, dated June 16 of that year, he says he found it "some years ago."

C. ensifolia Rich. in Mem. Mus. Par. iv. 60 (1818). **1695.** Handpost Farm, Hemel Hempstead (Herts), Eales.—Gibs. Camden, 326. "Under Brackenbrow near Ingleton in Yorkshire," Mr. Newton.—Ray Syn. ii. 242 (1696).

C. pallens Rich. in Mem. Mus. Par. iv. 60 (1818). **1670.** "In the woods near Stoken-Church . . . as also near Darking in Surrey."—Ray Cat. 339.

Epipactis latifolia All. Fl. Ped. ii. 152 (1785). **1562.** "I have sene it . . . in England in Soffock."—Turn. ii. 128 (back). "In the woods by Digswell pastures, halfe a mile from Welwen in Hartfordshire."—Ger. 358 (1597).

E. atrorubens Schultz, Oestr. Fl. ed. 2, i. 58 (1794). **1690.** "On the sides of mountains near Malham, four miles from Settle, in Yorkshire, plentifully."—Ray Syn. ed. i. 175.

E. palustris Crantz, Stirp. Austr. 462 (1769). **1660.** "On Hinton and Teversham moors and in many places in the Isle of Ely."—Ray C. C. 73.

Orchis hircina Scop. Fl. Carn. ed. 2, 193 (1772). **1641.** "Nigh the highway betweene Crayford and Dartford in Kent."—Johns. Merc. Bot. pars alt. p. 27.

O. pyramidalis L. Sp. Pl. 940 (1753). **1660.** "In a chalkie close at Hinton" (Cambs).—Ray C. C. 109.

O. ustulata L. Sp. Pl. 941 (1753). **1650.** "Cynosorchis minor pannonica . . . . on Scosby-lease [near Doncaster]. Mr. Stonehouse."—How, Phyt. 33.

O. purpurea Huds. i. 334 (1762). **1724.** "At Northfleet near Gravesend. Mr. J. Sherard."—Ray Syn. iii. 378.

O. militaris L. Sp. Pl. 941 (1753), and **O. Simia** Lam. Fl. Fr. iii. 507 (1778). **1666.** "Found . . . on chalkey hills neer the highway from Wallingford to Redding on Bark-shire side the River by Mr. Brown."—Merrett, 85.

O. Morio L. Sp. Pl. 940 (1753). **1597.** "In pastures," &c. —Ger. 158, 159.

O. mascula L. Fl. Suec. ed. ii. 310 (1755). **1562.** "One kinde hath many spottes in the leafe, and is called adder grasse in Northumberland."—Turn. ii. 152.

O. incarnata L. Fl. Suec. ed. ii. 312 (1755). **1841.** Distinguished from next sp. in Leighton's Fl. Shropshire, 429.

O. latifolia L. Sp. Pl. 941 (1753), and **O. maculata** L. Sp. Pl. 942 (1753). **1597.** "I have found them in many places, especially in . . . Swainescombe wood neere to Gravesend . . . and likewise in Hampsteed wood fower miles from London."—Ger. 170.

Aceras anthropophora R. Br. in Ait. Hort. Kew. ed. 2, v. 191 (1813). **1666.** "Found on several chalkey hills, neere the high way from Wallingford to Redding on Bark-shire side the river by Mr. Brown."—Merrett, 85.

Ophrys apifera Huds. i. 340 (1762), and **O. muscifera** Huds. *l. c.* **1597.** "Upon barren chalky hils . . . adjoining to a village in Kent named Greenhithe upon Longfield downs by Southfleet, &c. . . . likewise in a field . . . half a mile from S. Albons."—Ger. 166.

O. arachnites Reichard, Fl. Moeno-Franc. ii. 89 (1772). **1828.** "Chalky downs near Folkstone. Mr. Gerard E. Smith."—Sm. Engl. Fl. iv. 237.

O. aranifera Huds. ii. 392 (1778). **1663.** "In an old gravel pit near Shelford by the footway from Trumpington to the Church we found hundreds of them."—Ray C. C. App. i. 7.

Herminium Monorchis R. Br. in Ait. Hort. Kew. ed. 2, v. 191 (1813). **1663.** "In the chalk pit close at Cherry Hinton" (Cambs).—Ray C. C. App. i. 7.

Habenaria conopsea Benth. in Journ. Linn. Soc. xviii. 354 (1881). **1634.** "Orchis palmata minor calcaribus oblongis. . . . In montosis."—Johns. Merc. Bot. 55.

H. intacta Benth. in Journ. Linn. Soc. xviii. 354 (1881). **1864.** Found in May, 1864, by Miss More, at Castle Taylor, Co. Galway.—Journ. Bot. 1864, 228.

H. albida R. Br. in Ait. Hort. Kew. ed. 2, v. 193 (1813). **1670.** "This we found on the back of Snowdon-hill, by the way leading from Llanberis to Carnarvon."—Ray Cat. 227.

H. viridis R. Br. in Ait. Hort. Kew. ed. 2, v. 192 (1813). **1650.** "Orchis Batrachites. By Barkway (Herts). Dr. Johnsons MS."—How, Phyt. 82.

H. bifolia R. Br. in Ait. Hort. Kew. ed. 2, v. 193 (1813). **1696.** "The lesser Butterfly Orchis. In pascuis."—Ray Syn. ii. 238, 14, and see Linn. Trans. xvii. 463.

H. chloroleuca Ridley in Journ. Bot. 1885, 219. **1597.** "Hampstead Heath."—Ger. 166.

Cypripedium Calceolus L. Sp. Pl. 951 (1753). **1640.** "In a wood called the Helkes in Lancashire neere the border of Yorkeshire."—Park. Theatr. 218.

Iris fœtidissima L. Sp. Pl. 39 (1753). **1562.** "I have sene a litle flour delice growyng wylde in Dorset shyre."—Turn. ii. 23. "Xyris . . . . called in the yle of Purbek Spourgewurt."—Turn. ii. 171.

I. Pseudacorus L. Sp. Pl. 38 (1753). **1548.** "Acorus groweth not in England wherfore they are farre deceyved that use the yelowe flour de luce, whiche some call gladen for Acorus."—Turn. Names, A v, back.

Crocus nudiflorus Sm. E. B. 491 (1798). **1738.** "In Nottingham Meadows and about Trent-Bridge."—Deering, Cat. Stirp. 57 (as *Colchicum commune;* but see Ordoyno, Fl. Nottingham., 19).

Romulea Columnæ Seb. & Maur. Fl. Rom. Prod. (1818). **1834.** Found 24th March, 1834, by W. C. Trevelyan and John Milford, "on the Warren between Dawlish and Exmouth, Devonshire."—Loudon's Mag. N. H. vii. 272.

Sisyrinchium angustifolia Mill. Dict. ed. 8 (1768). **1846.** "Collected in a wood near Woodford, Co. Galway" [by Mr. James Lynam in 1845].—Phytol. ii. 500.

Gladiolus illyricus Koch, Synopsis, 698 (1837). **1857.** "Found by the Rev. W. H. Lucas in the New Forest, Hampshire, in 1856."—C. C. Babington in Ann. N. H. ser. 2, xx. 158.

Narcissus Pseudo-narcissus L. Sp. Pl. 289 (1753). **1548.** "Our yealowe daffodyl."—Turn. Names, E vj.

Galanthus nivalis L. Sp. Pl. 288 (1753). **1778.** "In pratis et ad sepes; in pomariis frequens, in comitatibus Westmorlandico, Cumberlandico, Lancasteriensi, Gloucesterensi."—Huds. ed. ii. 140.

Leucojum æstivum L. Sp. Pl. ed. 2, 414 (1762). **c. 1785.** "Found undoubtedly wild betwixt Greenwich and Woolwich . . . also . . . in the Isle of Dogs."—Curtis, Fl. Londinensis, fasc. 5, t. 23.

L. vernum L. Sp. Pl. 289 (1753). **1866.** "In the neighbourhood of Bridport, Dorset."—Mr. Mansell-Pleydell in Journ. Bot. 1866, 209: but see Gard. Mag. 1836, 371, and Fl. Oxfordsh. 301.

Tamus communis L. Sp. Pl. 1028 (1753). **1597.** "In hedges and bushes almost everywhere."—Ger. 722.

Ruscus aculeatus L. Sp. Pl. 1041 (1753). **1548.** "Groweth in Kent wilde by hedge sydes."—Turn. Names, F viij.

Asparagus officinalis L. Sp. Pl. 313 (1753). **1597.** "Groweth wilde in Essex . . . in great plentie neere unto Harwich, at a place called Landamer lading."—Ger. 954.

Polygonatum verticillatum All. Fl. Ped. i. 131 (1785). **1793.** "Arthur Bruce, Esq., Secretary to the Nat. Hist. Society of Edinburgh, first found it, July 1st, 1792, in the Den Rechip, a deep woody valley, four miles north-east of Dunkeld, in Perthshire."—E. B. 128.

P. multiflorum All. Fl. Ped. i. 131 (1785). **1562.** "Well knowen . . . in England."—Turn. ii. 98. "In Somersetshire, upon the north side of a place called Mendip," &c.—Ger. 758 (1597).

P. officinale All. Fl. Ped. i. 131 (1785). **1597.** "Groweth in certaine woods in Yorkshire, called Clapdale Woods, three miles from a village named Settle."—Ger. 758.

Maianthemum Convallaria Weber in Wigg. Prim. Fl. Holsat. 15 (1780). **1597.** "Groweth in Lancashire, in Dingley wood, sixe miles from Preston in Aundernesse; and in Harwood, neere to Blackburne likewise."—Ger. 330.

Convallaria majalis L. Sp. Pl. 314 (1753). **1597.** "On Hampsted Heath, fower miles from London, in great abundance," &c.—Ger. 332.

(To be continued.)

AMERICAN NOMENCLATURE.

[The following remarks, prefixed to the *Flora of Mount Desert Island, Maine*, recently published by Messrs. Edward L. Rand and John H. Redfield, deserve a wider publicity than they are likely to obtain in their original position. They show in many respects a reaction towards saner principles of nomenclature than those which have lately been promulgated by American botanists, and we think those of our readers who are interested in the subject will be glad to have them *in extenso*.

After laying down the principle that "the nomenclature and arrangement of a local Flora should follow that of some well-known or authoritative work or system," the authors proceed as follows:—]

It being granted that we must make our catalogue useful and intelligible, in duty to all who consult it, we had to consider what well-recognized standard we could follow. The choice appeared to lie between Gray's *Manual*, mainly the work of our greatest botanist, and the principles now embodied in their strictest form in the Rochester Code and extended in the Madison Code.* The chief of these principles one of us had studied for years, and the other had put to practical use, as a test of their real value. Moreover, we both felt that the priority of the specific name should on sound analogies be maintained, in opposition to the well-known rule of Dr. Gray that the first specific name in the right genus should prevail. Nevertheless, as a result of our deliberation we have decided that a local Flora at this time without question must follow Gray's *Manual*, whether or not its authors agree entirely with the nomenclature of that work; that to follow the system dictated by the Rochester Code is utterly impracticable and unwise, for it is neither consistent in theory nor sound in practice. This conclusion has been reached after long judicial consideration of the arguments for and against the system of the Rochester Code, whether practical or theoretical in nature, and with an earnest desire to approve any really beneficial alterations in the commonly accepted system of botanical nomenclature. We regret, therefore, that the Code, as a whole, must be condemned for the evil that is in it, and that the good it contains cannot be utilized in its present form. As it stands, it seems the work of botanists whose vision is bounded by the book-shelves of the library and by the herbarium walls, rather than of botanists possessing that added knowledge and grasp of affairs that is so indispensable to a correct solution of difficulties in such a practical matter as that of botanical nomenclature.

The mental attitude of the supporters of the Rochester Code seems at first somewhat difficult to explain. If we abandon, for a theory of our own, well-known and established principles sanctioned by the greatest authorities and the soundest analogies, we must justify our action. We have not yet seen any such justification of this Code. It seems that the explanation must lie in the fact that its supporters cannot appreciate that they have a case to prove, and that the burden of proof rests on them alone. If they act in contravention of fundamental principles, and of the authority and consensus of the greatest botanists, they must prove to the satisfaction of an intelligent man that they are acting rightly. Even granting that the Code is proved of utility, the rule still applies to every change they seek to make. In fact, however, they assume the contrary, and are open to the gravest criticism for constantly leaning in favour of change, and of blindly following what is apparently their guiding principle,—*Quieta movere.* Where doubt exists, the old and accepted name or identification should be exempt from following such fundamental rules. If the Code permits the contrary practice, as its advocates take for granted, it cannot be followed.

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* Adopted in 1892 and 1893 by the Botanical Club of the American Association for the Advancement of Science.

Thus it appears to be most necessary for these botanists to prove that their system secures advantages that the old system does not possess. If, on the one hand, they claim that it is more sound in theory, it may be said that practical relief, not theoretical relief, is needed. Moreover, their theory is inconsistent within itself, being founded partly on absolute dedication of a name to the public, and partly on the absolute inability of the public to do what it will with its own. Thus we are not only told that an author cannot change a name once published, because it has passed from his control, but we are also no less gravely told that a name once published can never be changed by the public, either by usage or in any other manner—an inconsistency that it is hard to explain in any reasonable manner. If, on the other hand, they claim that in practice strict priority does away with the certainties of individual judgment, and secures absolute certainty in nomenclature for past, present, and future, this assertion may be fairly denied, at least so far as the past is concerned. Any one who has followed the many differences in judgment, and the disagreements as to actual priority, can easily realize that it is a matter requiring much acute and long-continued investigation to fix absolutely the historical priority and identity of names. This fact should have deterred many botanists from rushing into print with their new-old names, like children eager to display a new toy, only to discover later that they had been too hasty, and had merely added to the ever-increasing host of synonyms. Furthermore, how can it be known that this system will be permanent? Its advocates claim that they not only can violate other theories, and coin artificial rules to secure any desired result, but can as readily disregard and reject many principles of a fundamental nature that are well recognized by practical men of affairs, whether scientists or laymen, and have been so recognized and approved by the greatest botanists. If these can be set aside by any one with a theory of his own, what security have we that the Rochester Code, with all its inconsistencies and objectionable features, will not be set aside in a year or two in favour of some radically different theory? This is a very serious matter. Through short-sightedness the fatal error has been made of disregarding the permanent and actual for the transient and theoretical. If, therefore, we approve such a course of action, we in reality cut the solid ground from beneath our feet. Our view of this matter is fully confirmed by the dissatisfaction of many of our botanists, and their freely expressed intention to use the Rochester Code only until they find something better. Indeed, even one of the leaders among the faithful of late refuses to allow the Code in regard to the starting-point for genera.

Of course the greatest fault to be found with the Code arises from the wanton exercise of *ex post facto* legislation to accomplish the ends of its advocates. Were the question of botanical nomenclature in the main a matter of interest to scientists only, as until very recently ornithological nomenclature has been, this legislation would do no harm if generally assented to; but to employ it in a science like that of botany, where generic and specific names have become, as it were, subjects of property rights, is unwarranted and short-sighted in the extreme. One result has been that, if we follow the Code, we may have a botanical name and a horticultural name for the same plant, both correct, but one to be used at one time, one at another—a somewhat humiliating state of affairs when it is borne in mind what efforts have been made to make horticulturists use the generally accepted botanical names.

The worst of the whole matter is that the horticulturists are dealing sensibly with facts as they find them, while the botanists are striving with theories to annihilate facts. It is hard enough, as anybody of experience knows, to make a horticulturist adopt a change in nomenclature made necessary for scientific reasons; but how impossible it would be to force upon him a change made merely to carry out a theory or a system of questionable expediency! What can be gained by intensifying this distinction between botanical and horticultural nomenclature, especially now that the horticulturists have refused to follow the Rochester Code on the practical ground that it does not recognize the well-established principles of property rights, custom, usage, and the salutary maxim, *Quieta non movere!*

Any system of nomenclature, especially one creating confusion by asserting new and unusual theories, should come before the public as a result of mature, impartial, long-considered adjudication. While we are perfectly willing to consider the Rochester Code as an expression of the personal opinion and preference of its advocates, we find ourselves unable to admit that it has any other authority to sustain it. It is true that it was fathered by the vote of the Botanical Section of the A.A.A.S. at the Rochester Meeting in 1892, but the published record of the proceedings shows clearly that the committee appointed could not have given the subject proper consideration and adjudication. In fact, apparently less than one day was sufficient for this committee to pass on a subject of so much practical importance, and then in a manner that involved the rejection of fundamental principles confirmed and supported for years by the authority of the greatest botanists. Further comment is unnecessary.

It has, moreover, been asked, with some pertinence, What authority had the Rochester Meeting to bind American botanists by any such code of nomenclature as a majority of the members present might see fit to adopt? It is perfectly clear that its sole authority lay in the united dictation of the various botanists present. We confess we find it somewhat amusing—after all the protest against one-man authority, no matter how great that man might be, and after all the laudation of the democracy of the botanists—that the real democracy, in which every botanist has a vote, should now be dictated to by a comparatively few botanists of various degrees of repute. History testifies that power and dictation are fully as sweet to thirty tyrants as one! The matter practically wears this aspect in our opinion, since we have been unable to find more than passive approval of the Code outside of a comparatively small circle of botanists, and in many cases have found active disapproval or a decided disclaimer of any sympathy with the Code where we hardly expected it. We sincerely hope that botanists in other countries will not be deceived into thinking that this school of nomenclature includes the American botanists, for it includes only a part, even if it is the part that makes most of the noise!

Another evil produced by the adoption of this Code is the great prominence given to the botanical name-monger, a term which we use for convenience to denote those botanists who devote much of their time to changing about names of plants for no scientific reason, but merely to fit them to a code. To the binomial thus manufactured they add their names, and stand apparently on a par with botanists whose names attached as authors stand for true scientific achievement. The addition in parentheses of the name of the original author of the specific name does not explain the binomial. There are, moreover, no indications at present that there is likely to be such a consensus of agreement in the names of plants as might enable us to omit the name of the author altogether. Thanks to the provincial-mindedness of the so-called reformers, we are farther from this agreement than we were ten years ago. All this is a natural result of the unjustifiable attempt to apply rules too strictly in many respects to the past, over which no botanist can expect to legislate if he knows anything of conditions outside of his herbarium walls. If the supporters of the Rochester Code think they have a right to upset important results of nomenclature evolution for nearly a century and a half merely to help out their theories, they must be veritable Rip van Winkles, just awakened from a comfortable nap of years.

We sincerely regret that so many of our younger botanists have been led astray by this *ignis fatuus* of theory, and so blinded to the clear, fixed lights of sound judgment and of practice. No code of botanical nomenclature can hope to accomplish good results that does not meet the needs of the time; this the Rochester Code does not do. We cannot afford to begin over again, or submit to temporary confusion for the sake of any theory, or for the sake of a future peace that may never come.

In our consideration of this matter we have pointed out a few reasons why we could not follow the Rochester Code. It would be easy to be more specific, and give others, did we feel that it were incumbent on us to do so. We see no reason, however, why objections should be set out by any one dissatisfied with the Code, when the supporters have thus far been unable to prove that it has any right to exist beyond their own will. Let them attempt to prove their case, and their argument will be impartially heard by all interested in this matter of botanical nomenclature. At present they are in default.

SHORT NOTES.

Stipules of Blepharostoma trichophyllum. — It is interesting to trace the origin and history of the mistake, noticed by Mr. Farmer (*Journ. Bot.* 1894, 327), as to the supposed absence of stipules of *Blepharostoma trichophyllum* (L.) Dum. Hooker (*Brit. Jung.*) describes the leaves as proceeding from every side of the plant, clearly showing he mistook the stipules for leaves; and in his *Synopsis*, p. 7, under section *Stipulæ nullæ*, says: "Wahlenb. (*Lapp.* p. 385) and Mohr (*Fl. Crypt. Germ.* p. 411) appear to me to have fallen into an error in attributing to it stipules." I have not been able to refer to Wahlenb., but in Weber & Mohr (*Bot. Taschenb.* p. 411 (1807)) we read: "Foliis amphigastriisque (stipulæ) similibus," a fairly accurate description; this is repeated by Schwaegrichen (*Prodr.* p. 20 (1814)), Weber (*Hist. Musc.* (1815)), and Martius (*Fl. Crypt. Erlang.* (1817)). Dr. Taylor, in Mackay's *Flora Hibernica*, p. 65 (1836), describes the stipules as being nearly as large as the leaves, and very like them. Hübener (*Hep. Germ.* (1834)), a most careful and original student, describes the leaves as being placed in three rows, observing that those of the under row have been considered stipules by most authors; but they cannot be distinguished either by their form or position from the leaves. Gray (*Nat. Arr. Brit. Pl.* (1821)), copying from Hooker, says, "Stipules 0." Ekart (*Syn. Jung. Germ.* (1834)), copying descriptions and also drawings from Hooker without any acknowledgment, says the same. In Dumortier's *Syll. Jung. Eur.* (1831) we first meet with *Blepharostoma* as a section of *Jungermannia;* in his *Recueil* (1835) it is published as a genus, comprising three widely different species, each of which are now referred to different genera—*Cephalozia connivens* (Dicks.), *Lepidozia setacea* (Web.), and *Blepharostoma trichophyllum* (L.); in his latest work, *Hep. Eur.* (1874), this unnatural arrangement is adhered to. Dumortier, who had only a superficial knowledge of the *Hepaticæ*, founded his genera principally on the perianth; and it is easy to see, on looking at the three plates of Hooker (*Brit. Jung.* 7, 8, & 15), that he grouped them together because each had a ciliated perianth. Dr. Cooke (*Handbook of Brit. Hep.*), in copying from Dumortier, has fallen into the same mistake in describing *B.*

trichophyllum as being without stipules; he also wrongly describes *Lepidozia setacea* as being without, although under the description of the genus *Lepidozia* he says: "Plants stipulate." Mitten (*Journ. Linn. Soc.* (1864)), evidently dissatisfied with the company which *B. trichophyllum* was in, removed it to a new genus—*Chætopsis;* but as Spruce, Carrington, Stephani, and most authorities retain Dumortier's genus for this species, I follow them.—W. H. PEARSON.

POTAMOGETON RUTILUS Wolfgang. — In the Berne Herbarium (kindly sent me by Dr. Fischer) is a sheet of specimens labelled, "*Potamogeton pusillum.* Ely, Cambridgeshire, 25 July, 1825 (*Henslow*, 1825)." Part of these are true *pusillus*, and part *P. rutilus*, but they are not mixed, so that it may be a label has been lost; they are "Ex herb. Guthnick." Still this plant should be kept in mind by British collectors. I am aware that Dr. Lees records it in his *Flora of West Yorkshire* (p. 418), but his description will apply to several forms of *pusillus;* and in continental herbaria a proportion of the plants under the name are not the plant of Wolfgang, although several have three notes of admiration placed after the names.—ARTHUR BENNETT.

ADIANTUM CAPILLUS-VENERIS AT MORECAMBE BAY.—On July 13th, 1893, Mr. W. H. Stansfield, of Southport, and I, when botanizing on the northern shores of Morecambe Bay, found *Adiantum Capillus-Veneris* growing in cavities of the mountain limestone near the sea. In July, 1894, we visited the spot again. There is a large tuft and two small plants. We believe that the maidenhair is here truly wild; this opinion is shared by Mr. J. G. Baker, of Kew. The rock on which it grows is that which it chooses for its home in Co. Clare; the station is in the same latitude as its habitat in the Isle of Man, and not sixty miles distant from it; the climate is little less favourable than that which it endures in the south-west of our island. We gathered only one frond, which we have deposited in the British Museum.—A. H. PAWSON.

CNICUS TUBEROSUS AND OTHER WILTS PLANTS.—It may be interesting to botanists to know that the rare Wiltshire thistle still exists in the locality given for it in Preston's *Flora of Wiltshire.* In 1891 I visited the place in June, but the specimens were then very young, and were very difficult to recognise from *C. acaulis* without the desperate resort of digging them up. In fact, I felt some amount of doubt as to their being true *C. tuberosus.* This last September, while on a driving tour through western England, I again visited the locality, and, as the plants were in good condition, had no longer doubt as to their correct identity, nor had I difficulty in separating them from the *C. acaulis* with which they grew, and with which I believe they hybridise. Although growing on a dry chalk down, some specimens of *tuberosus* were two feet high. Occasionally the stem was branched, bearing two or even three heads. The shape of the anthode is different from that of *acaulis*, which is more cylindrical, while *tuberosus* is more hemispherical. The colour of the flowers is also different in the two plants; *C. tuberosus* is more of a rose-pink colour, while *acaulis* is more purple; the individual florets are larger in *acaulis* than in *tuberosus*. In fact, the anthodes of *tuberosus* somewhat recall *C. pratensis*. Unfortunately the characters mentioned rather disappear in drying, since the flowers become very alike in tint, and pressure changes the characteristic shape of the anthodes. The leaf characters of the two plants are, when fresh, sufficiently marked to allow them to be picked out, but these, too, are to a great extent lost in drying. I may say that the plant appears confined to a limited area, so that it is to be hoped botanists who may visit the place will not dig up more than one specimen; the cutting of the plant will not do much injury. In Savernake Forest I saw the plant which has been called *Epipactis purpurata* Sm., and which in my Oxford Flora I named *E. violacea* Boreau. It is, as a rule, a later-flowering plant than *E. latifolia*. In Oxfordshire this year it was in full flower long after *E. latifolia* was over blossom. The other plants noticed in Wiltshire during my drive which may be worth notice are:—*Ranunculus peltatus* var. *penicillatus*. Plentiful in the stream at Nether Avon. Dist. 7. — *Brassica nigra* Koch. 3. River Cole side, Inglesham. — *Saponaria officinalis* L. 2. Roadside near Wootton Bassett.—*Prunus avium* L. Savernake.—*Rubus leucostachys* Sm. 2. Near Wootton Bassett. — *R. corylifolius* Sm. 2. Malmesbury. 6. Salisbury. 7. Near Old Sarum.—*R. cæsius* L. 2. Wootton Bassett. 3. Inglesham. 7. Nether Avon.—*Rosa rubiginosa* L. 7. Old Sarum.—*Myriophyllum verticillatum* L. 3. Inglesham, in the canal near Marston Maisey. — *Picris hieracioides* L. 7. Pewsey. — *Chenopodium rubrum* L. 6. Near Salisbury, on a manure-heap in a field.—*Atriplex angustifolia* Sm. 7. Nether Avon. —*Polygonum amphibium* L. 3. Inglesham. — *Mercurialis annua* L. 7. Garden ground near Salisbury. — *Salix purpurea* L. 7. Nether Avon. — *S. cinerea* L. 3. Inglesham. 2. Wootton Bassett. 7. Nether Avon. 4. Chilton Foliatt. — *Elodea canadensis* Mich. 3. Inglesham. 4. Chilton Foliatt. — *Juncus lampocarpus* Ehrh. 3. Inglesham.—*Alisma Plantago* L. var. *lanceolatum* (With.). 3. Canal near Marston Maisey.—*Potamogeton perfoliatum* L. and *P. pectinatus* L. 3. In the canal near Marston Maisey. I may point out that there is an old record in *Spencer's Complete Guide*, 1771, for "the wild pink in the pasture ground near Salisbury."—G. Claridge Druce.

Cladium germanicum Schrad. in Scotland.—In the 2nd ed. of *Topographical Botany* (1883) this plant was recorded from four Scottish counties, *i. e.*, Wigton, Berwick, Forfar (extinct), and Sutherland West. In his recently published Wigton list, Mr. J. McAndrew gives it as one of the species that require to be re-found in its recorded habitat, "Ravenston Loch, near Whitehorn." I am ignorant of the locality in Berwick, and I should be glad if any botanist can supply it; the plant is gone from Forfar, where specimens were collected by Robert Brown and others. It is still to be found in Sutherland in the old locality, "between Kylestrome and Badcal Church." Since 1883 it has been found or reported in Dumfries (Loch Kinder) by Mr. Scott Elliot; but this loch is in Kirkcudbright, from which county Mr. Coles sent me a notice of its occurrence. This year Mr. Macvicar has sent me specimens from that part of Argyll (Mordant, at about 600 ft. alt.) included in Co. 97, Westerness, of Watson. On the 30th of last October Mr. Ballantyne showed specimens from Co. 100, Bute, at the Glasgow Natural History Society, and considered it "was carried there by birds." In July, 1890, Mr. A. H. Evans found it in Co. 105, W. Ross, and sent me a note of its discovery. This is by no means a northern plant, as are so many of the *Cyperaceæ* that reach Scotland. In Norway it occurs very rarely; in Sweden only north to Oestergotland; in Russia only south of Ingria (St. Petersburg); in Denmark it is found on most of the islands, and it is only here that it becomes at all common; north of this its localities are isolated and local, and the plant itself not abundant; perhaps more so in Gotland, Sweden, than anywhere north of Denmark. In England additional counties reported for it are, 53, Lincoln South (Lees, *Outline Flora of Lincolnshire*, p. 22), and 69, Westmoreland ("Wilson," *Record Club Report*, p. 108 (1887)). It requires confirmation for Carnarvon and Flint. In Anglesea it was found by Hugh Davies in 1799. It is undoubtedly becoming scarcer, although still abundant in Norfolk and Cambridge.—ARTHUR BENNETT.

IRISH RUBI.—The following brambles were collected by me during this summer, and verified by Rev. A. Ley and Rev. W. M. Rogers. Growing in the neighbourhood of Ballinderry, Moneymore, Co. Derry:—*Rubus Selmeri* Lindeb. New to Ireland. — *R. erythrinus* Genev. — *R. Lindleianus* Lees. — *R. villicaulis* Koehl. — *R. leucostachys* Schleich. — *R. pulcherrimus* Neum. — *R. micans* Gren. & Godr. New to Ireland. — *R. scaber* W. & N. — *R. macrophyllus* W. & N.—*R. pulcherrimus* × *rosaceus?* Mr. Ley says, "I do not know it: interesting." — *R. lasiocladus.* "I believe this to be the Herefordshire plant, which has been referred to *lasiocladcs.*" New to Ireland. — *R. radula* Weihe. — *R. rhamnifolius* W. & N. Collected in Glendun, Co. Antrim:—*R. dumetorum* W. & N. — *R. Lindleianus* Lees. — *R. pulcherrimus* Neum. — *R. discolor* Bab.—S. ARTHUR BRENAN.

NOTICES OF BOOKS.

Index Bryologicus sive enumeratio muscorum hucusque cognitorum adjunctis synonymia distributioneque geographica locupletissimis quem conscripsit E. G. PARIS. (Ex Actis Societatis Linnæanæ Burdigalensis.) Pars I. 1894. Paris: Klincksieck. Pp. vi, 324. Price fr. 12.50.

THE want of a satisfactory Nomenclator or Index to the bibliography of the Mosses of the whole world has for a long time been acutely felt by students of bryology. The original descriptions are so widely scattered through the realm of botanical literature, and the existing synopses are so wofully out of date, that those who have not access to large herbaria find themselves handicapped by insuperable difficulties in the pursuit of their studies. Nor is there any single herbarium in existence which at all covers the ground of the total moss-flora described. There is no free system of exchange such as ought to be maintained; and, even if there were, it would prove a failure in the case of the numerous rare and unique specimens which are too small to admit of division and distribution.

The rapidity with which the moss-flora has increased since the publication of Bridel's *Bryologia Universalis* in 1826–27 is strikingly shown by the following figures. That work contained 931 species. Carl Mueller's *Synopsis Muscorum* (1847–51) raised the total to 2364; Jaeger and Sauerbeck's *Genera et Species Muscorum* (1870–79) to 7422 species; and the work now under review is likely to carry the total to upwards of 11,000 species. Nor are we as yet anywhere near the end of the story. Further researches into the flora of Africa, Australasia, and China cannot fail to result in the output of thousands of new species. However, at the present time it is of the utmost importance that we should be put in touch with all the work that has hitherto been accomplished. Until Jaeger and Sauerbeck's *Genera* appeared, we were very much at sea in the matter. The natural classification attempted by those authors serves very well as a basis for the arrangement of a herbarium, and it has been adopted for that purpose in the British Museum. The book has many errors of detail, but its greatest fault is the absence of an index to the species and their synonymy. Of course any one can make his own index; but that is a tedious operation, as I know from my own experience. However, the labour of making such an index is far more than recompensed by the command of the literature thereby obtained. But the book soon fell behind the times. In 1880, 1888, 1891, Kindberg gathered together in his *Enumeratio Bryinearum Exoticarum* a large number of additional species, but gave no references to show where they might be found. Indeed, many of them remain *nomina nuda* to this day. Thus in 1891 the want of a Nomenclator became more manifest than ever.

Great, then, was the feeling of relief with which one read in the *Revue Bryologique* (1892, p. 41) that General Paris had begun the preparation of such a work so long ago as in 1862, at the instigation of his illustrious master, W. P. Schimper; and that, after having been forced by the demands of active military service to lay it aside for more than a quarter of a century, he intended to devote himself to its completion. And now we are able to enjoy the first fruits of his arduous labours. The manuscript is complete; and the Linnean Society of Bordeaux has undertaken to publish it in five annual parts of 320 pp. each. The book is much more than an *Index Bryologicus*, as its alternative title shows; for it gives to each species a very full synonymy (but not always a complete synonymy, as I shall point out further on), and where the synonymy is unsettled it refers to special papers on the subject; it gives the geographical distribution, and, so far as they are known, the inflorescence and habitat. The cross-references are ample and exact. Discarded generic and specific names are clearly distinguished from those that are maintained by the employment of special type. The plan of arrangement is strictly alphabetical; hence the admission of subgenera, however desirable in the case of big and difficult genera as *Bryum*, &c., is impossible. The subgenera are, however, dealt with by the method of cross-reference. As instances of the fulness of the specific synonymy may be cited *Amblystegium riparium* and *Barbula unguiculata*, each of which, with its varieties, occupies a page and a half; and at least eight other species cover a page apiece. As to genera, the largest treated in the present part are *Bryum* and *Barbula*, which fill 67 and 44 pages respectively, the former with 560 species, the latter with 394. In *Bryum* is included *Anomobryum*, but not *Rhodobryum*. Jaeger and Sauerbeck indicated 308 species of *Bryum* (exclusive of *Rhodobryum*). Hence the number of species in the genus has increased by upwards of 80 per cent. The rate of increase is not so high in other cases; *e.g.*, it is about 50 per cent. in *Barbula*, *Brachythecium*, and *Campylopus*. *Campylopus* contains 349 species; *Brachythecium* 173. In all, 82 admitted genera are included in Part i., which ends in *Dicnemon*. The number of species is 2758.

The nomenclature is based upon that which was projected by Schimper in the *Bryologia*, and is practically the same as that of Jaeger and Sauerbeck. Running like a minor plot through the present volume may be traced portions of an inedited monograph of the *Cryphæaceæ* by Paris and W. P. Schimper. Imported from it are two new genera—*Cyptodon* and *Dendrocryphæa*. *Campylopodium* Paris, a third new genus, represents a section of *Angstroemia* in C. Mueller's *Synopsis*. The two following genera at first sight appear to be new. "*Decodon* C. M. MSS." ought to bear the reference, *Act. Soc. Sci. Fenn.* xix. (1893), n. 5, p. 20; and the reference of its first species is incorrect. It is a genus of *Erpodiaceæ*. And "*Brothera* C. M. MSS." was, though General Paris omits to say so, previously published in Kindberg's *Enumeratio* (1891, p. 105). In it is placed that species of unsettled affinity—*Campylopus Leanus* Sulliv. A change of name to be noted is that from *Solmsia* to *Braunfelsia*, the former name having been previously taken up for a genus of *Tiliaceæ*.

Objection must be made to such spelling as Ångströmia. It is not Latin, nor was it so spelt originally. In vol. i. of the *Bryologia Europæa* it figures in the text as *Angstroemia;* so too in the Corollarium and the index to the whole work. The variation *Angströmia* appears on tab. 94, and in the *Conspectus* (vol. i. p. viii). Similar variations of reading occur in Schimper's *Synopsis*, edd. i. et ii., and in C. Mueller's *Synopsis*. A Swede would latinise the name thus: *Aongstroemia*. But it is our duty to follow the original text. Botanists ought to respect the laws of etymology; but let them not employ them for the disturbance of botanical landmarks. Again, I do not believe for an instant that "*Andreäa*" is correct. I have not been able to consult the original reference (*Hann. Mag.* 1778, p. 1601); but I see that Ehrhart, when republishing his description of the genus in 1787 (*Beiträge zur Naturkunde*, p. 15), wrote "Andreæa." Again, *Anacolia* is copied from Schimper's *Synopsis*, ed. ii.; but in ed. i. the spelling is *Anacolium*. Again, *Aphanorhegma*, not *Aphanoregma*, is what Sullivant wrote. It is curious, too, to find that, though all subsequent botanists have written *Cinclidotus*, Palisot-Beauvois (*Æthéog.* 1805, pp. 28, 52) originally made the etymological error of writing *Cicclidotus;* but he gives the Greek original alongside, and that is what botanists have followed. *Chylophyllum*, a genus suggested by Jaeger and Sauerbeck (*Genera*, ii. p. 733), has been overlooked by General Paris; so also have some contributions by Mr. Mitten—*e. g.*, in Godman's *Natural History of the Azores* (London, 1870) are seven new species of mosses, and in Melliss's *St. Helena* (1875) are thirteen new species. I have a few more instances, which I shall send to General Paris with various errata which I have noticed.

I have said above that the synonymy is not always complete. I find that Jaeger and Sauerbeck's *Genera* is not quoted so often as it should be. For instance, I had occasion to search in that book for *Hypnum Wilkesianum* Sulliv., which General Paris puts into *Cylindrothecium* without giving any reference to Jaeger. The latter put it into *Brachythecium*, and that fact ought to have been included in General Paris's synonymy. Again, what has become of *Barbula nivalis* Jaeg. i. p. 279? It ought to be quoted as a cross-reference to *Geheebia cataractarum*, as also, in a future Part, should *Tortula vinealis* var. *nivalis* Spruce (*Musc. Pyren. Exsicc.* 185, and *Ann. Mag. Nat. Hist.* iii. p. 172), which Schimper and his followers have falsely quoted as var. *glaciale*.

But space forbids that I should continue. The work is one of the utmost importance to bryologists, and will be heartily welcomed by them. But the high price charged for it, and the protracted period of its publication, is likely to elicit a good deal of grumbling.

A. Gepp.

Royal Gardens, Kew. Hand-list of Trees and Shrubs grown in Arboretum. Part I. Polypetalæ. London: H.M. Stationery Office. 1894. 8vo, pp. 297. Price Eightpence.

"The present is the first of a series of Hand-lists of the collections of living plants cultivated in the Royal Gardens which it is intended to issue from time to time. It is hoped that they will be found useful in indicating, to visitors interested in particular groups of plants, the species which Kew already possesses. In the hands of correspondents they will serve to show in what directions the collections may be added to. It is further hoped that they may be found of some value in establishing an approximate standard of nomenclature, which is often much confused in gardens, and too frequently erroneous. This is particularly the case with woody plants (shrubs and trees) grown in the open air. The preparation of the present list has accordingly been first taken in hand; it represents the work of many years, and has only been accomplished with considerable labour."

These remarks, prefixed to the *Hand-list*, give an idea of its scope. Its usefulness to a limited class will not be denied, and if, as is understood, Mr. Nicholson, the Curator of Kew Gardens, is mainly responsible for its compilation, none will question its value. But it may be permitted to express a doubt whether it should have been allowed to take precedence of the greatly needed Guide to the Gardens, which has now been out of print for many years, and the absence of which must deprive the Gardens of much of their value to a very large proportion of visitors. For one person to whom the *Hand-list*—or rather this instalment of it—will be of service, hundreds would purchase and profit by a general guide to Kew Gardens.

With regard to the *Hand-list*, it may be doubted whether its form is the most convenient that could have been adopted. When complete, it will contain at least a thousand pages—a somewhat serious addition to the contents of one's pocket. But perhaps it is intended as a book for the study rather than the garden—a suggestion which receives support from the extensive synonymy, which for practical purposes might well have been reduced, *e.g.*, the five synonyms given under *Drimys Winteri* are purely of botanical interest. Only alternate pages are printed and numbered, by which means the bulk of the book is doubled for the benefit of the comparatively few who are likely to use the blank pages for notes.

A gardener's rather than a botanist's view of species is taken in certain cases, and a large—nay, an "immense"—number of trade and garden names have been brought into order. The arrangement of species is usually alphabetical, but there are exceptions, as in the genus *Prunus*, which is treated in the wide sense of Bentham and Hooker's *Genera Plantarum*, but is divided into sections, in each of which a fresh alphabet is begun. The varieties included seem very numerous, but the Curator of the Gardens may be trusted to select only such as are worthy of mention. There is a capital index—of synonyms as well as retained names—and with very few exceptions—as when "Cleyera species" is printed in the thick type which signifies "name adopted at Kew"—it is admirably printed. A reference to a good figure, and a brief indication of geographical range, follow the names of most species.

It is strange that no headings should have been put to the pages. In this respect the List contrasts unfavourably with the Kew Floras, in which the name of the order and the genus are given on each page. Here there is no such indication, nor is even the name of the species repeated when that extends over a second page; so that one not only opens upon "*A. rubrum*" or "*P. Michauxi*," but on "var. *azorica*" or "var. *argentea medio-picta*," without any clue to the genus or even the order of which these are representatives. Of course this clue is supplied by turning backwards, sometimes for several pages; but it is of the first importance that lists of this kind should be easy to consult, and headings such as we have mentioned would in nine cases out of ten save the necessity of consulting the index. We hope that this drawback will be obviated in the following portions of the book; and that the blight which so often arrests the development of publications in instalments will not hinder the speedy completion of this useful List.

ARTICLES IN JOURNALS.

Annals of Botany (Dec.). — B. M. Davis, '*Euglenopsis*, a new Alga-like Organism' (1 pl.). — D. M. Mottier, 'Life-history of *Notothylas*' (2 pl.). — F. C. Newcombe, 'Cause and Conditions of Lysigenous Cavity-formation.'—V. M. Spalding, 'Traumatic Curvature of Roots' (1 pl.). — C. H. Wright, 'Double flower of *Epidendrum vitellinum*' (1 pl.).—T. Johnson, 'Two Irish Brown Algæ: *Pogotrichum* & *Litosiphon*' (1 pl.). — F. O. Bower, 'Apophory and production of gemmæ in *Trichomanes Kaulfussii*.'

Bot. Centralblatt (No. 49). — A. Tschirch, 'Ueber Secrete und Secretbildung.' — (Nos. 50, 51). E. Knoblauch, 'Zur Kenntniss der *Gentianaceæ*.'

Bot. Gazette (Nov. 16). — F. D. Bergen, 'Popular American Plant-names.' — J. H. Schaffner, 'Nature and distribution of attraction spheres and centrosomes in vegetable cells' (1 pl.).— A. F. Foerste, 'Notes on dédoublement.' — J. M. Coulter & J. N. Rose, *Myrrhidendron*, gen. nov. (Umbelliferæ: 1 pl.). — G. F. Atkinson, '*Completoria complens*.'

Botaniska Notiser (häft. 6). — A. G. Kellgren, 'Några ord om den skandinaviska björk regionen.' — J. R. Jungner, 'Om bladtyperna inom släktet *Saxifraga*.' — K. Ljungstedt, 'Ord om de latinska växtnammens uttal och skrift.' — E. Lönnberg, 'Ord om Floridas växtvärld.'

Bull. de l'Herb. Boissier (Nov.). — E. Levier, *Riccia Henriquesii*, sp. n. (1 pl.). — J. Daveau, *Eragrostis Barrelieri* (1 pl.). — A. de Jaczewski, 'Les Massariées de la Suisse.'

Bull. Torrey Club (No. 24).—A. Hollick, 'Wing-like appendages on petioles of *Liriophyllum* & *Liriodendron*' (2 plates). — J. K. Small, *Oxalis recurva* & *O. grandis*, sp. n. (2 pl.). — Id., 'Species of *Polygonum*' (1 pl.). — T. H. Kearney, 'New Florida Plants.'— H. H. Rusby, *Lophopappus* (Mutisiaceæ) and *Fluckigeria* (Gesneriaceæ), genn. nov.

Erythea (Dec.). — E. L. Greene, 'Novitates Occidentales.'— Id., 'Corrections in Nomenclature.'

Gardeners' Chronicle (Dec. 1). — *Adiantum dissimulatum* Jenm., sp. n. — (Dec. 8). *Asplenium tenebrosum* Jenm., sp. n. — (Dec. 15). *Serrastylis robusta* (fig. 91).

Journal de Botanique (dated Sept. 16). — R. Chodat, '*Golenkinia* (Protococcoideæ), gen. nov. — E. Roze, 'Le fruit de l'*Ecballium Elaterium*.' — (dated Oct. 1). E. G. Camus & L. Jeanpert, 'Une œuvre peu connue d'Hippolyte Rodin.' — J. Camus, 'Les noms des plantes du Livre d'Heures d'Anne de Bretagne.'

La Nuova Notarisia (dated Sept.-Oct.). — P. Pero, 'I laghi alpini Valtellinesi.'—F. Schmitz, 'Kleinere Beiträge zur Kenntniss der Florideen.'

Oesterr. Bot. Zeitschrift (Dec.). — A. van Degen, 'Ueber die systematische Stellung der *Moehringia Thomasiana*.' — R. v. Wettstein, '*Euphrasia*' (cont.). — A. Nestler, 'Untersuchungen über Fasciationen' (2 pl.).—F. Kränzlin, 'Orchidaceæ Papuanæ.'

BOOK-NOTES, NEWS, &c.

Dr. G. E. Post is making rapid progress with his *Flora of Syria*, six hundred pages of which are already in type. The work will contain a large number of new species, and is likely to present many features of interest. The ground covered is from Sinai to Taurus, and from the Mediterranean to the Syrian desert.

The first Appendix to the *Bulletin of Miscellaneous Information* for 1895, bearing that year on its title and first page, was published during November. It contains the Kew seed-list for 1894.

The eccentric guise in which scientific names are wont to appear in newspapers is perhaps not to be wondered at, but we have a right to expect better things from a journal "published under the authority of the Council" of the Royal Geographical Society, and edited by its assistant-secretary. Yet in a notice occupying little more than a page of the *Geographical Journal* for December, five out of the fourteen plant-names are misspelt, these being such well-known ones as *Helichysum* (twice spelt "*Hemichysum*"), *Sanseviera* ("*Sanseirera*," twice), *Dombeya* ("*Dombea*"), *Disa* ("*Dysa*"), and *Hyphæne* ("*Hypæhne*"). "*Senecios*" and "*euphorbias*" are not Latin words, and should not be in italics. "Baker, fils." (twice) is an unusual abbreviation. The *Disa* named is a hitherto unpublished species, of which no description is given—a practice which is becoming sadly too frequent, and which ought to be stopped.

We have received the first instalment of the *Conspectus Floræ Africæ*, by MM. Durand and Schinz, which extends to nearly a thousand pages, and includes the Monocotyledons and Gymnosperms. We hope to review it at an early date.

We have received four publications of the United States Department of Agriculture, dealing mostly with edible and poisonous Fungi. They are reports prepared by Dr. Thomas Taylor, who is "Chief of the Division of Microscopy." The Reports are well illustrated with coloured and other figures, but their greatest interest to us is in the enterprise of the Department of Agriculture that issues them. The great extension of work in plant pathology undertaken officially in the United States, and the great activity generally of the Department of Agriculture in botanical matters, throws into the shade the efforts of our Board of Agriculture and of the County Councils—increasingly useful though these be. The Department of State in America appears to discharge, in addition, some of the functions of our Royal Agricultural Society.

We regret to record the death of Dr. F. Buchanan White, of whom we hope to publish some account in our next issue.

THE FIRST RUSSIAN BOTANIST.

By G. S. Boulger, F.L.S., F.G.S.

It is not perhaps generally known that the first botanist to visit any part of Russia, except Poland, was, if not an Englishman, English at least by adoption—that he was none other than the elder of the two well-known John Tradescants. It is true that this fact was published nearly fifty years ago in the Proceedings of the Imperial Academy of Sciences of St. Petersburg, and was made known to English readers in a volume published in London in 1854; but a paper in German in a Russian publication is apt to escape attention here, and Mr. John Studdy Leigh's translation of Dr. J. Hamel's work, under the title of *England and Russia*, bears no external suggestion of botanical interest, and is now, moreover, out of print.

It is true also that the fact of John Tradescant's having been at some time in Russia is plainly implied in the following important passage in Parkinson's *Paradisus Terrestris* (1629), p. 346:—

"*Elleborus albus vulgaris.* White Ellebor or Neesing roote . . . . in some parts of Russia, in that aboundance, by the relation of that worthy, curious, and diligent searcher and preseruer of all natures rarities and varieties, my very good friend, Iohn Tradescante, often heretofore remembred, that as hee said, a good ship might be loaden with the rootes hereof, which hee saw in an Island there."

This passage is reproduced almost *verbatim* in the *Theatrum Botanicum* (1640), p. 218, and these references did not escape the vigilance of Pulteney, who writes of Tradescant:—"He travelled several years, and into various parts of Europe; as far eastward as into Russia' (*Sketches of the Progress of Botany*, i. 176).

In his copy of Pulteney, now in my possession, the Rev. W. W. Newbould has added a note:—"For what is known about the three Tradescants consult Hamel (Joseph von) England and Russia, comprising the Voyages of J. Tradescant the elder." I never did so, however, until my return from my recent visit to Russia. Before starting, and whilst on the voyage, I read with care the Rev. Alexander A. Boddy's volume, *With Russian Pilgrims* (London, n. d.), which, though not written either for botanists or by a botanist, quotes freely from Dr. Hamel's work, or rather from the English translation of it, and refers to Tradescant's voyage as a well-known fact. On my return, Mr. E. G. Baker called my attention to Ruprecht's *Symbolæ Plantarum Rossicarum*, reprinted at St. Petersburg in 1846 from the *Beiträge zur Pflanzenkunde des Russischen Reiches*, issued by the Imperial Academy in 1844, but with new pagination and a postscript. This valuable little work of Ruprecht's, I may remark in passing, contains a paper, 'Flores Samojedorum cisuralensium,' enumerating the plants found near Archangel and those found by him in his journey in 1841 on the island of Kolguev and the adjacent regions, including descriptions of several new species. Of the postscript (pp. 221–2), which with the rest of the book is in Latin, I may as well perhaps give a summarised translation:—

"By a certain unique and happy accident it has come about that the memory of the elder John Tradescant's having reached the original port of Archangel in 1618, and of his botanical examination of that region, then first made, has been preserved. The only printed record of this journey of Tradescant's is in a certain work of Parkinson's, published in 1629."

Ruprecht then refers to the above-quoted passage from the *Paradisus*, and continues:—

"But, the study of botanical history being at the present day almost extinct, the passage quoted, in a very rare book, until very lately scarcely to be found in a single Russian library, attracted no one's attention. These facts and an anonymous itinerary in Tradescant's handwriting having now been brought to light at Oxford in the Ashmolean (or more justly Tradescantian) Museum by the skill of Dr. Hamel, readers are referred for a full account to his memoir (*Recueil des Actes Acad. Pétersb.*, Dec. 1845). From this I will only cull the facts that Tradescant recorded *Rubus Chamæmorus*, *Cornus suecica*, *Veratrum Lobelianum* (with a note almost *verbatim* as in Parkinson), some fourth species of Conifer, and *Rosa moscovita* (*Mus. Tradesc.* p. 162) so common that an island near the port had received its name among English traders from it. This Rose Island, the name of which has now entirely faded from the memory of the inhabitants, situated, as it was, opposite the monastery of St. Nicholas, is important because our knowledge of the wild roses of the district is not sufficiently full for us to say with certainty whether this old record refers to *Rosa cinnamomea*, to a new species which might most fitly bear Tradescant's name, or to *R. acicularis* Fl. Samoj., which is very different (in its denser prickles, stipules, and bracts, for instance) from the Siberian form and from Lindley's tab. 8. The Muscovia Briar, *Rosa* (*tertia silvestris*) *Russica*, of W. Salmon's *Engl. Herb.* 1711, chap. 602, pp. 962, 963, seems distinct from Tradescant's. J. Tradescant the elder, the first founder of a museum of natural history in England, a painstaking observer, and, if we except Poland, by far the earliest investigator of plants in Russia (being earlier than Kaempfer), lived before Morison, Ray, Plukenet, and Petiver, and could have derived little from any one except Turner and Gerard. Being little skilled in Latin, he had hardly consulted the works of Lobel or Clusius. This ought in fairness to be borne in mind in criticising his itinerary, which was only written *currente calamo* for his own use."

Dr. Joseph von Hamel was an academician and privy councillor of St. Petersburg, who accompanied Alexander I. to England in 1814, and was present at Oxford when the Tsar received the honorary doctorate of the University. I have not discovered how long he remained in England; but he studied at the British Museum as well as at the Bodleian, and must have been acquainted with Parkinson's reference to Tradescant and *Veratrum album* before he overhauled the Ashmolean MSS. It is true that his memoir was not laid before the St. Petersburg Academy for thirty years; but, when it was completed, it was certainly a most remarkable piece of work to be produced by a foreigner. He had evidently intended to write the history of English intercourse with Russia; but, finding Willoughby and Chancellor's voyage fully narrated in Hakluyt and in Pinkerton, he dwelt mainly upon Tradescant's, of which he had himself discovered the record. At the same time, with characteristic love of genealogical and biographical detail, he elaborated the history of the Willoughby family, incidentally telling the story of the life and friendship of Francis Willughby and John Ray, and in the same way carefully gleaned everything he could about the Tradescants, visiting Lambeth as well as Oxford in the course of his investigations.

An examination of the original memoir, or of the well-executed translation by Mr. J. S. Leigh, shows that the eulogistic summary above quoted from Ruprecht is inaccurate in some minor particulars. The Ashmolean MSS. examined by Hamel had been removed from the Ashmolean Museum to the Bodleian Library; and, before the publication of Hamel's work, had been partly catalogued by Mr. W. H. Black, of the Record Office. In this *Catalogue of MSS. bequeathed to the University of Oxford by Elias Ashmole*, Part i. (1845), No. 824, xvi. is entitled, "A Voiag of ambasad [to Russia] undertaken by the right honnorable Sr. Dudlie Diggs, in the year 1618" (pp. 175–186*b*). This MS. is described by Mr. Black as follows:—

"This curious narrative of the voyage round the North Cape to Archangel begins with a list of the chief persons employed in the embassy, and contains observations of the weather, and on the commercial, agricultural, and domestic state of Russia at that time. It is written in a rude hand, and by a person unskilled in composition. The last half-page contains some chronological notes and other stuff, perhaps written by the same hand."

There is, or was, it seems, no indisputable autograph of Tradescant, nor is he named in this MS. or in the Russian archives which contain the names of most, if not all, of Sir Dudley Digges's crew. Hamel, in fact, did not suspect the authorship of the itinerary until he came to the description of "helebros albus enoug to load a ship"—almost the very words of Tradescant as quoted by Parkinson. When, however, we read the various descriptions of plants which the MS. contains, we shall, I think, considering where it was found, pronounce Dr. von Hamel to have been fully justified in endorsing it, as he did, with the name of Tradescant. But we do not altogether follow his reasons for concluding that the name under which Tradescant sailed was "John Coplie"; nor are we willing to adopt the suggestion that, as Coplie is described, with another, as "wustersher men," Tradescant was itself an assumed name, and its owner an Englishman, and not a Dutchman by birth.

Digges's vessel was the 'Diana,' of Newcastle, and sailed from Gravesend, June 3rd, 1618, reaching Tynemouth on the 16th, the North Cape on July 6th, the bar of the mouth of the Dvina on the 13th, and the harbour of Archangel, or rather that of Nikolskoi, St. Nicholas' Monastery, on July 16th. They left Archangel on

August 5th, and passed the North Cape on the 16th, but did not reach St. Katherine's Docks until September 22nd. Immediately on landing, on July 16th, Tradescant writes:—

"I found a bery growing lowe which in bery was muche like a strawbery but of an amber coller and of other fation of leaf: the people eat the bery for a medsin against the skurbi the leaves be muche like our Avince and of suche a greene. I have brought sume of them hom to show. I dried sume of the beryes to get seede whearof I have sent par to Robiens of Paris."

Hamel, of course, identifies this plant with *Rubus Chamæmorus*, the yellow cranberry or "moroschka" of the Russians, and points out that "Avince" is "Avens," but curiously specifies *Geum urbanum* instead of *G. rivale*, which the foliage of the cloudberry far more closely resembles. "Robiens," as Hamel says, was Vespasian Robin, who is known from other sources to have been one of Tradescant's correspondents.

On July 20th the itinerary continues:—

"I had one of the Emperor's boats to cari me from iland to iland to see what things grewe upon them, whear I found single Rosses, wondros sweet, with many other things whiche I meane to bringe with me."

Of these roses the MS. elsewhere adds:—

"I have seen roses, only single, in a great abundance, in my estimation four or five acres together; they be single, and much like oure sinomont rose; and who have the sense of smelling, say they be marvelus sweete. I hope they will bothe growe and beare heere, for amongst many that I brought home withe the roses upon them, yet some on may grow."

Here, besides the curious fact that the writer was deficient in the sense of smell, we meet for the first time with the question as to what species of wild rose it was which gave its name to that island opposite the monastery of St. Nicholas which had been the head-quarters of the English merchants at Archangel down to 1591. Hamel notes that no cultivated roses were introduced into Russia until 1630; that there is a "Rosa Muscovita" in the "Museum Tradescantianum" (p. 162), and a "Rosa sylvestris Russica, the wild bryer of Muscovie" in Parkinson's *Theatrum;* and that there is also a "Rosa (tertia silvestris) Russica" or "Muscovia Briar" in Salmon's *English Herbal* (1710), pp. 962–3. As, however, Ruprecht very wisely doubts the identity of this last plant with that of Tradescant, it may be well to transcribe here the description in Salmon:—

"V. The third, or Muscovia Briar Rose. This Wild Briar has several reddish yellow Stalks rising from its Root, spotted or rather bunched out as it were with Blisters in several places, with Prickles thereon like the first Common Briar or Wild Rose. The Leaves are not many, but small like the Common Wild Hedge Briar, or rather smaller, and turning red in Summer. The Roses are single and small, of a deep incarnate color."

I am not sure that I know the *Rosa acicularis* of Ruprecht's *Flores Samojedorum*, nor do I think that I visited the original Rose

Island; but I was much struck with the uniformity of the briars of the neighbourhood of Archangel and other parts of Northern Russia; and the specimens of these which I brought home are typical *Rosa acicularis* of Lindley, which is of course quite unlike Salmon's description, but, though belonging to the *R. alpina* section, is not unlike *R. cinnamomea* in several particulars.

After the first mention of this rose follows the account of the still abundant *Veratrum album*, which furnished the clue to the authorship; and then this mention of *Prunus Padus*, the "tscheremucha" of Russia:—

"They have littill trees that they make hoops of, which the Inglishe say they be wilde cheryes, but I cannot believe it. It is of that kind, but is like a chery in leafe, and beareth a bery less than our scarbis, bery somewhat blackishe, but was not ripe at my being theare; the wood is wondrous pliant, and if a twig chance to tuche the ground it will take roote, as I have seen in many places. I took up of them in July, an brought them over a plant or two, which I hope will growe; for all the unfit season of the yeare they be very willing to grow. Now for the abundance of hoopes that there is mad, I may imagine, for our coopers, for the great caske of caveare, and the Fleming, Hollanders, and Hamburgers, and Russes, spend such abundance, yet our people bring them away for the hooping of the cask in Greenland; and by the report of the coopers, they be the best hoops in the world, for they say, in a whole day they break not on."

Then follows one of the chief signs of careful observation in the record:—

"In the contrie, as 5 parts is woods and unprofitable grounds, I have seen 4 sorts of fir trees an birch trees of great bignes, whiche in the spring tyme they make incistion for the juice to drinke, which they saye is a fine coole kind of drink, which lasteth the most part of May and the beginning of June."

Hamel suggests the four conifers to have been *Pinus sylvestris*, *Picea obovata* Ledeb. (= *Abies obovata* Ruprecht), *Larix sibirica* Ledeb. (= *Abies Ledebourii* Ruprecht = *Larix Archangelica* Laws. ex Steud.), and *Abies sibirica*.

Tradescant records but few things from hearsay; but he does add:—

"By report they have most sorts of trees that we have in Ingland, up in the contrie, both oake, elm and ashe, aple, peare and cheryes; but the fruit les, and not so pleasant. This have bin tould me, and amongst the rest of a plant that growethe upon the Volga, whiche they call God's tree, whose leaves be much lik to fennell; but the report is, is pasing sweet and of great vertue."

This last-named plant Hamel explains to be *Artemisia Abrotanum*, which is known in Russian as "Boshige derewe," *i. e.*, God's tree.

Returning to matters within his personal knowledge, the narrator continues:—

"I have seene shrubs of divers kinds, as Ribes, or as we call them currants, white, red, and black, far greatter than ever I have seen in this cuntrie; 3 or 4 shorts of whorts, red ons, and two sorts of blewe ons. The currants, and all other things wear so much biger than ours, as I could gather by the vyger of the somer, which is so quick, that when a thing is in blosom it never fellethe could till it is a perfect frute."

Hamel explains that the red "whorts" are *Vaccinium Vitis-idæa*, the "Preusselbeere" of Germany, and "Brussnika" of Russia; and *Oxycoccos palustris*, the "Moosbeere" or "Klukiva"; and that the "blewe" ones are *V. Myrtillus*, the "Blaubeere" or "Tschernika," and *V. uliginosum*, the "Trunkelbeere."

Tradescant saw strawberries offered for sale, the "beryes" "in nothing differing from ours, but only les"; and he also notes the cultivation of rye, barley, oats, and pease. Hops he does not mention, though he says:—"I have drunke such beere brewed by a Russe in the Inglishe house, bothe for strength and for good tast as I have never betterd it in England." Of course some other bitter may have been employed; but hops grow now at Archangel, and beer is brewed there that will bear comparison with that of Burton, or, I should perhaps rather say, of Pilsen.

The following is an interesting account of *Cornus suecica*, which Tradescant compares to *Mercurialis perennis*, the word "loupe," employed in it for "axil," being new to me in this sense:—

"A sort of plant, bearing his fruit like hedge-mercury, which made a fine showe, having leaves on the tope of every stake, having in every loupe a berry about the bignes of a hawe, all the three berryes growing close together, of a finner bright red than a hawe, which I took up many roots, yet am afraid that none held, because on our being on ground we staved most of our fresh watter, and so wear faint to watter withe salt watter, but was mad believe it was freshe, whiche that plant having but a long whit thin root, littill biger than a small couch gras; and the boys in the ship, before I peseved it, eat of the berries, except som of them cum up amongst the earthe by chance. I found this plant to growe in Rose Island."

Certainly one of the most striking plants of the district to-day is *Dianthus superbus;* so that we are not surprised to find Tradescant writing of Rose Island:—"Thear I found pinks growing natturall of the best sort we have heere in England, withe the eges of the leaves deeplie cut or jaged very finely."

A species to be identified with less certainty is a "Geranium flore serulle," found in addition to *Geranium pratense*. There is a *G. Batracoides flore cæruleo* in the *Museum Tradescantianum*, p. 116, and a *G. Muscoviticum purpureum* in Parkinson's *Theatrum*. They may be *G. sylvaticum*.

Tradescant also records "Angelica," by which he means *Archangelica officinalis*, one of the most prominent plants in the delta of the Dvina at present; "Lysimachia," i. e., *L. vulgaris*, which I also saw there; "Pentafolia major," which may be either *Potentilla Comarum* or *P. norvegica*, both of which occur; "Saxifrage," by which he probably meant *Pimpinella Saxifraga;* "Sorrel"; and "Ros solis," i. e., *Drosera*. He has thus recorded some two dozen wild plants from his own observation, a short but interesting list.

JUNCUS TENUIS Willd. IN GREAT BRITAIN.

By Arthur Bennett, F.L.S.

During the interval between *English Botany*, t. 2174 (1816), and Mr. Towndrow's note in this Journal for 1884 (p. 91), no confirmation of Don's supposed find, nor any mention of the plant occurring elsewhere in Great Britain, seems to be on record in any British Flora. In this Journal for 1885 (p. 1, t. 253) Mr. Ridley describes the species, with its synonymy, distribution, &c., on the faith of Mr. Towndrow's specimens.

In 1887 Mr. J. McAndrew sent me specimens from a roadside in Kirkcudbrightshire (*Journ. Bot.* 1887, p. 374), where it occurred among other rushes and grasses that were certainly native. In August, 1890, Mr. McAndrew sent me specimens from a station two miles distant from the above. In 1889 Mr. R. Scully sent me specimens from Kerry, where he found the plant in an old (grass-grown) road, and also near the sea, among *Carex extensa*, *C. distans*, *J. Gerardi*, &c. (*Journ. Bot.* 1889, p. 335).

In November, 1889, it was gathered by Mr. P. Ewing between the Bridge of Weir and Kilmalcolm, Renfrew. It had been sent by Mr. J. Thomson in August, 1863, to the Greenock Museum, under the name of "*J. acutiflorus*," from "Dennistoun, Kilmalcolm," Renfrew. There it occurred "for several hundred yards along the roadside, at a place where the soil is rather sandy" (*Trans. Nat. Hist. Soc. Glasgow*, p. 168 (1891)).

In August, 1891, Mr. L. Watt found the plant by the side of the River Leven, Dumbartonshire; numerous specimens from both these Scotch counties were kindly sent me by the finders.

Mr. Griffith sent me specimens from Port Madoc, Carnarvonshire, where it had been found by Mr. Williams and the Rev. W. H. Painter, on "a large tract of land reclaimed from the sea" (*Journ. Bot.* 1891, p. 120). In 1894 (*Journ. Bot.* p. 311) Mr. Graham records it from Cornwall (near Fowey ?), "on a strip of waste land by the high road," but does not state with what plants it was associated. Last month Messrs. Kidston and Stirling sent me specimens from Stirlingshire, and remark, "It will be difficult to explain its introduction here, even when it grows on a roadside."

Thus in the course of ten years we have this plant occurring in no less than seven counties of England and Scotland, and in Ireland.

In the east of France it is considered to be an introduced plant, but in the Department Saône-et-Loire and Jura it occurs plentifully, "et certe indigenus" (Nyman, *Consp.* Supp. 313). Sonder (*Flora of Hamburgh*) says it occurs on sandy ground, but enters it with the other Junci, without any doubt; neither do Garcke (*Fl. Nord. et Mit. Deutschl.* (1858)) nor V. den Bosch (*Fl. Bataviæ*) express any: though Nyman says, "Germ. (plur. sed sporad.)."

In 1848, Maly (*Enum. Pl. Aust.*) places it within brackets, but adds in MS. in his own copy, "Bohemia, Karl"; and in 1861, when Neilreich published his Supplement to Maly's book, only this single locality, "Georgswalde," was known for the Austrian empire. It seems to be known from two localities only in Denmark, but no doubt is expressed as to its nativity by Lange (*Hand. Danske Fl.* ed. 4. p. 169). At Wexiö, Smoland, Sweden, "introduced probably"; this being a seaport, is there any means by which it could have got there in packing (if even it is so used)? I have noticed, in the materials that Belgian glass is packed with, some 130 species of plants, some certainly not British.

In Silesia, Uechtritz accepts it (*Schl. Phanerogam.* 1877, 1878, 1881), where he records it from nine localities in that province. It seems to be on record for only one station in N. Italy. In Ledebour's *Fl. Rossica*, 1853, it is not on record for the Russian empire, but has since been recorded from two provinces. In Holstein and Schleswig it was recorded as early as 1838, and was found sparingly in 1889 in another station (Prahl, *Kr. Fl. Sch.-Hol.* 1890): but is queried as a native species.

In Canada it seems to occur very often in "wet meadows," by river-sides. Prof. Macoun remarks:—"Very abundant throughout the prairie region, and northward in the mixed forest country to the Peace River" (*Cat. Canad. Pl.* Part 4 (1888)): so that its habitats there are much more various than in Europe. In Gray's *Manual N. U. States*, "Low grounds, fields, and roadsides" are given for it.

I wish that those who have found this plant in England and Scotland would carefully study its surroundings, and give us a list of the plants it occurs with, and whether any certainly introduced species grow near it.

The problem British botanists have to work out is whether *Juncus tenuis* is an introduced species; if so, how did it come? if not, how is it that it has remained so long unfound? Of course I am not taking Don's reported stations into account here, although there are several specimens from him in various herbaria.

NOTE ON MYROSMA CANNÆFOLIA Linn. fil.

By J. G. Baker, F.R.S.

In 1781, in the *Supplementum Plantarum*, the younger Linnæus described a new genus of *Marantaceæ*, from specimens sent from Surinam by C. G. Dalberg, under the name of *Myrosma*. There is a full description of the genus at p. 8, and of the only known species at p. 80, under the name of *Myrosma cannæfolia*. There can be no doubt about the plant intended. Both the generic and specific descriptions occupy more than half a page each, and the two specimens from which they were made are still extant in the Smithian herbarium at the Linnean Society. The only ambiguity arises from the fact that Linnæus cites doubtfully a figure of Rheede's (*Hortus Malabaricus*, xi. p. 67, t. 37) which belongs to *Phrynium capitatum* Willd., a common Tropical Asian species.

This *Myrosma cannæfolia* has had a singularly varied and confusing bibliographical history. It has a striking habit, and would readily catch the eye of a plant-collector, and is distributed throughout the eastern side of Tropical America from the West Indies to the south of Brazil.

In 1797, in his *Species Plantarum* (i. 13), Willdenow altered the specific name to *cannæformis*. In 1826 it was introduced into cultivation in England, and was figured and described by Roscoe in his magnificent *Monandrous Plants of the order Scitamineæ*, tab. 39, under the name of *Phrynium Myrosma*. Roscoe discusses the question of nomenclature at considerable length, and finally concludes to sink *Myrosma* under *Phrynium*, which was constituted as a genus by Willdenow in 1797. In point of fact the two genera are quite distinct from one another.

There are two distinct types of fruit in the *Marantaceæ*. In the first series two out of the three cells of the ovary are obliterated, and the fruit is essentially one-seeded. In the other series the three cells of the ovary are all equally developed and fertile. *Maranta* and *Myrosma* belong to the first series, *Phrynium* and *Calathea* to the second. In 1828 the plant was redescribed by Lindley from garden specimens (*Botanical Register*, t. 1210), under the name of *Calathea macilenta*, and it was figured by Loddiges in 1831 at tab. 1781 of the *Botanical Cabinet*. In 1831, in A. Dietrich's edition of the *Species Plantarum* (p. 22), it is called *Maranta Myrosma*. It was again collected in Guiana in quantity by Richard S homburghk, and was distributed (No. 1305 of his Guiana collection) as *Thalianthus macropus* Klotzsch. It appears as "*Thalianthus macropus* Klotzsch, nov. gen.," without any description, in addition to *Myrosma cannæfolia*, on p. 1125 in the botanical volume of his *Versuch einer Fauna und Flora von Britisch Guiana*, published in 1848. In Kornicke's *Marantearum Prodromus*, published in 1862 (*Moscow Bulletin*, xxxv. 66), it is described under the name of *Maranta* (*Xerolepis*) *Moritziana*, and also enumerated on p. 135 under the names of *Calathea Myrosma* Kornicke and *C. macilenta* Lindl. In his *Prodromus Monographiæ Scitaminearum* (1862) Horaninow implicitly follows Kornicke, and the plant again appears both under *Calathea* and *Maranta* under three specific names. If it had been really identical with *Calathea*, *Myrosma* would have to take precedence, as the former genus was not constituted till 1818, thirty-seven years later than *Myrosma*. Finally Eichler and Peterssen have made Kornicke's section *Xerolepis* of the genus *Maranta* into a genus under the name of *Saranthe*, and our present plant is fully described and figured in the excellent monograph of *Marantaceæ* contributed by the latter to the great *Flora Brasiliensis* (iii. pt. 3, p. 168, t. 50) under the name of *Saranthe Moritziana*, and it also appears there twice amongst the doubtful species of *Calathea* under the same names as in Kornicke and Horaninow. The genus *Saranthe* is only *Myrosma* over again, and the genus *Ctenanthe* of Engler and Peterssen only differs from *Saranthe* in leaf-arrangement, so that I prefer to follow Bentham in not separating it. *Myrosma* is so fully and clearly described by

Bentham and Hooker in *Genera Plantarum* that I can add nothing to what is there stated. They estimate the number of species at twelve, but only five of these have been published under the genus, and so only five are enumerated in *Index Kewensis*.

In *Flora Brasiliensis* Peterssen describes nine species of *Ctenanthe* and twelve of *Saranthe*. In addition to these, at least three others are in cultivation, and several others in English herbaria, gathered by Gardner and Burchell, which Peterssen does not include. *Ichnosiphon Marlæ* Eggers (*Bot. Centralblatt*, liii. 307, t. 2) is also a *Myrosma*, so that the number of species of the genus now known is not less than thirty.

ON TWO NEW SPECIES OF CLERODENDRON.

By H. N. Ridley, M.A., F.L.S.

In the *Pianti Ospitatrici*,* Prof. Beccari described a remarkable *Clerodendron*, *C. fistulosum*, allied to *C. Siphonanthus*, with fistulous stems containing ants' nests. I have to add two more species of this curious group, with the same habit, but with different inflorescence and flowers.

C. myrmecophila, n. sp. Suffrutex parce ramosa, glabra, 3-pedalis, cauli ¼ pollicis crasso, internodiis dilatatis, fistuloso, cortice albo. Folia opposita vel alterna, herbacea, oblonga lanceolata, pedalia, 4 pollices lata, acuminata, nervis 12 paribus, basi obtusa vel acuminata, petiolo 3-pollicari, fistuloso. Panicula terminalis pubescens ramis ultra-pedalibus. Bracteæ lineares, ¼-pollicares, persistentes, ad apicem comosæ. Flores in apicibus ramorum paniculæ congestæ, aurantiacæ. Calycis sepala 5 linearia acuta pubescentia ⅛ pollicis longa. Corolla tubulosa aurantiaca pollicaris, tubo gracili recto rubro, lobis inferioribus oblongis spathulatis rotundatis, superioribus angustioribus aurantiacis. Stamina longe exserta pollicaria gracillima rubra. Antheræ perparvæ lineares oblongæ. Stylus gracillimus ruber staminibus brevior, brachiis 2 gracilibus setaceis. Bacca nigra globosa ¼-pollicaris. Calyx lobis multo auctis rubris, ½ pollicis longis, ⅛ pollicis latis.

Singapore, in dense wet woods in Choa-Chu-Kang.

This is a very beautiful and interesting plant, and well worthy of cultivation. In habit it approaches *C. fistulosum* Becc., but the inflorescence is rather that of *C. paniculatum* L. It is an unbranched or few-branched shrub, with a smooth pale-coloured stem about 3 ft. tall, the internodes dilated, and, except when quite young, hollow. In some of the internodes, but by no means all, ants make their nests. The ants that I have found belong to a species of *Pheidole* allied to *P. megacephala* Fabr., I am informed by Mr. Waterhouse. In Beccari's *C. fistulosum* the inhabiting ants belonged to the genus *Colobopsis*.

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* *Malesia*, ii. 48, t. iv.

The leaves are terminal, rather thick, and polished dark green. The panicle is large and showy, the branches and calyx-lobes covered with red fur. The corolla-tube and back of the lobes are scarlet, with darker red fur; the front of the lobes is glabrous and bright orange. The lobes are nearly equal in size, and similar, except that the uppermost one is hooded. The stamens are long and slender, crimson in colour, with small black anthers.

The plant is abundant in the one jungle where I have seen it, but must be very local. It flowers in August.

C. breviflora, n. sp. Caulis suffruticosus obtuse angulatus albescens fistulosus $\frac{1}{4}$ pollicis crassus. Folia opposita lanceolata acuta subcoriacea ad 6 pollices longa 3 pollices lata, petiolo 3-pollicari dilatato. Panicula densa terminalis pedalis, ramis verticillatis brevibus crassiusculis, minute pubescens. Bracteæ lineares angustæ $\frac{3}{4}$-pollicares ad apicem paniculæ comosæ. Flores plurimi in apicibus ramorum congesti, pedicellis $\frac{1}{4}$-pollicaribus. Sepala late linearia acuminata curva $\frac{3}{8}$-pollicaria. Corollæ tubo brevi $\frac{1}{2}$-pollicari pubescente recto cylindrico, lobis 2 obovatis rotundatis, 3 longioribus angustioribus spathulato-oblongis, $\frac{1}{4}$ pollicis longis, $\frac{1}{8}$ pollicis latis. Stamina longe exserta pollicaria tenuia gracillima, antheræ minutæ oblongæ. Stylus subæquilongus gracillimus. Stigmata brevia.

Johore. Kampong Chin-Chin, Ulu Batu Pahat (*Lake & Kelsall*).

A single specimen was brought by the expedition across Johore in 1892. I have no note of the colour of the flowers.

This species differs from the last-named in the more coriaceous leaves, denser panicle with shorter and stouter branches, often four in a whorl; the larger calyx, and very much shorter corolla, with broader lobes; the stamens are twice as long as the tube. As in the last species, the panicle ends in a spike of bracts without any flowers. The petioles, though swollen in the middle like the stem, are not hollow, but contain pith.

C. fistulosum Becc., from Borneo, differs in its much longer flowers crowded at the apex, as in *C. Siphonanthus*, and white, with much shorter stamens and pistil.

TWO ADDITIONS TO THE LIST OF BRITISH ROSES.

By the Rev. E. S. Marshall, M.A., F.L.S.

Some time since, I had notice from my friend the Rev. W. Moyle Rogers, as well as from Mr. Charles Bailey, of a plant collected at Boxley Warren, E. Kent, by Dr. O. St. Brody, which seemed to be either a form of *Rosa rubiginosa* or a hybrid with it. Mr. Beeby had previously sent me the record of a rose found by him in the same neighbourhood in 1878, which was referred by Mr. Baker to *R. involuta*, between var. *Doniana* and var. *Robertsoni*. *R. involuta* is now held (no doubt rightly) by Prof. Crépin to be made up of hybrids between *R. pimpinellifolia* and various forms of two or three other species. Knowing that *R. pimpinellifolia* and *R. rubiginosa* are both plentiful on the downs above Boxley, I thought it very probable that the plants first mentioned might prove to be the offspring of these two. Accordingly, Capt. Wolley Dod and I spent the greater part of a day, early last summer, in systematically searching the bushy downs from Burham south-eastwards, hoping to meet with the hybrid in question. Although we saw many hundreds of both species *en route*, the object of our search was not forthcoming until, just as we despaired of success, my companion came across eight or ten small bushes, growing amid a regular thicket of *R. pimpinellifolia*, which we at once saw to be almost intermediate between that and the sweetbriar. While the general habit recalled *pimpinellifolia*, especially by the crowded, very unequal armature and the small, neat, suborbicular leaflets, these latter were doubly serrate, densely glandular beneath, and almost as sweet-scented as those of *rubiginosa*, the prickles also having a strong reddish tint and being more or less curved. No flowers had yet expanded; but the pedicels and receptacles, as well as the sepals, were densely glandular-setose, characters which were retained until the fruit dropped off, in a small plant which I transferred to my garden. I have since seen Mr. Beeby's plant, which differs only in having fewer glands on the under side of the leaves.

Although feeling no doubt whatever about the true origin of this form, I sent specimens for Prof. Crépin's opinion, who replied as follows:—"C'est bien cet hybride, qui se présente tantôt avec des pédicelles et réceptacles lisses et avec le dos des sépales lisse également (= *R. biturigensis* Bor.), tantôt avec des péd., réc. et sép. hispides-glanduleux." He further remarked:—"Le *R. pimpinellifolia* × *rubiginosa* sera à comparer avec le *R. involuta* var. *Nicholsonii*." This I have not yet seen. In his recent work, *Rosæ Hybridæ*, pp. 61–2, M. Crépin indicates the following Continental localities for this hybrid:—*France:* Bourges (Dept. *Cher*), Clermont (Dept. *Puy-de-Dôme*), Mont-St.-Martin (Dept. *Ardennes*); *Germany:*— Grünstadt and Dürkheim, in the Palatinate, and Kreuznach, in Rhenish Prussia; adding (*Obs.* ii. p. 63):—"Il y aura à examiner si, en Angleterre, le *R. pimpinellifolia* × *rubiginosa* n'a pas été confondu parmi les variétés du *R. Sabini* Woods."

I may mention also that I subsequently collected, about a mile further on, a curious rose, which I am inclined to consider *micrantha* × *rubiginosa*, a suggestion thought highly probable by Mr. Rogers, to whom I showed all the material gathered. Judging by the specimens sent to him, M. Crépin cannot, however, distinguish it from *rubiginosa*, from which, indeed, such a combination could with difficulty be separated by any well-defined characters, considering the close kindred of the suggested parents.

On the last day of July I revisited Boxley Warren in the company of Mr. J. F. Jeffrey, of the Edinburgh Botanic Gardens, and examined a great number of rose-bushes. *R. rubiginosa* here varies considerably, but only one of the variations observed has received a special name from Prof. Crépin. This, owing to its small glabrous fruit and smooth pedicels, I at first thought might just possibly have a strain of *R. pimpinellifolia* in it; a theory, however, which more detailed examination showed to be groundless. The report upon it was as follows:—"C'est pour moi la var. *jenensis* M. Schultze du *R. rubiginosa* L. Pédicelles et réceptacles lisses; sépales non glanduleux sur le dos. C'est une variété rare et qui est nouvelle pour l'Angleterre." Dr. Focke (in the new edition of Koch's *Synopsis*, p. 836) gives *Mitth. Bot. Ver. Thür.* 1884, as the place and date of publication.

Although the question is unconnected with what precedes, I may state here an experience of mine which probably has some bearing on a remark under *R. Sabini* in Mr. Baker's *Monograph of British Roses*, pp. 205–6:—"Ascending to 300 yds. in Yorkshire, and probably to a considerable height in Forfarshire, as Don localizes a specimen 'on a rock on one of the mountains at the head of Clora [Clova], near the limits of perpetual snow,' hence his name *nivalis*)." On July 12th, 1888, when descending from the table-land above Craig Rennet into Glen Fiagh, I noticed, when but a short distance down the cliffs, a rose which I supposed at the time to be *R. pimpinellifolia*. It was not in flower, and I unfortunately omitted to take specimens or make a proper examination; but I have little doubt that this was Don's station, if not the very same bush. The elevation must have been at least 2500 ft., probably more.

ON THE RUBI LIST IN 'LONDON CATALOGUE,' Ed. 9.

By the Rev. W. Moyle Rogers, F.L.S.

Since the publication of the 8th edition of the *London Catalogue* in 1886, a great impetus has been given to our study of British Rubi by Dr. Focke's visits to England in 1889 and 1894. He has now seen a considerable number of our plants in the living state, in addition to the very large number of dried specimens which he has been receiving all this time. Many of the difficulties and uncertainties which weighed upon Professor Babington when he compiled the list for the 8th ed. of the *Catalogue* have thus gradually been removed. In a very large number of cases there is no longer room for doubt as to the identity of our species with Continental ones. But, on the other hand, not unnaturally a good many of the names with which we were once familiar have had to give place to new ones, and the persevering work of a steadily increasing company of students has brought to light many strikingly distinct new forms which can no longer be ignored, though the utmost caution and self-restraint are necessary in our attempts to deal with them. That under these circumstances there should be considerable changes in our list is inevitable. I shall try to explain these, or give reference to former explanations, as I proceed, in the briefest possible terms. As it has been necessary to revise the comital numbers for the different species, the key to the revised numbers will be given by the enumeration in each case of the several Watsonian vice-counties in which the plant is known to occur. These will be found enclosed in ordinary brackets; the numbers for such additional vice-counties as may have been recorded, but for which further evidence seems desirable, being also given afterwards, enclosed in square brackets. As a further help to the surer identification of each species and variety, the number attached to the dried specimens which represent it in the Set of British Rubi (1892–1895) now being issued will also be given as "No. in Set"—so far as the first three fascicles distributed take us. An added "I." will imply that I also know the plant to be Irish.

RUBUS IDÆUS L. No. in Set, 51. 110 vice-counties (all except 1 and 45). I.

Var. b. *obtusifolius* Willd. (1811). *R. idaeus anomalus* Arrh. (1839). *R. Leesii* Bab. (1846). No. in Set, 1. 14 v.-c. (*viz.*, 4, 5, 9, 15, 22, 23, 36, 38, 49, 57, 69, 72, 85, and "Perth"). On the name see Dr. Focke's note in *Journ. Bot.* 1877, 369. Koehler's specimens of this plant (Bromberg, June, 1869), No. 32 of Dr. Focke's Rubi Selecti ("*R. idaeus* L. var. *anomalus* Arrhen. *R. Leesii* Babingt."), are clearly identical with the British form.

Var. c. *asperrimus* Lees. 1 v.-c. (11). Abundant in Alum Chine, Bournemouth (where it was pointed out to me by the Rev. E. F. Linton), and likely to occur in many counties. This alone of the several varieties described in *Eng. Bot.* 3rd ed. Suppl. (including the "*rotundifolius* Bab." of *Lond. Cat.* ed. 8) seems worth distinguishing.

R. FISSUS Lindl. No. in Set, 26. 40 v.-c. (4, 6, 9, 11, 14–16, 18, 22, 23, 34, 35, 38–40, 42, 43, 46–49, 52, 57, 58, 60, 62, 63, 66, 69, 70, 75, 86, 88, 90, 91, 96, 97, 105, 106, 111). [3, 50, 54, 55, 64, 72, 73, 87, 92, 98, 99]. I. Considerably more frequent than the next species, I think; but formerly much confused with poor-ground forms of *R. plicatus*.

R. SUBERECTUS Anders. No. in Set, 52. 31 v.-c. (2–6, 8, 9, 11, 17, 22, 34–36, 38, 40–43, 46–50, 56, 58, 64, 69, 73, 86, 96, 97). [10, 12, 14, 20, 37, 39, 53–55, 57, 58, 63, 65, 70, 72, 74, 76, 81, 87, 89, 90, 92, 98]. I. Like Prof. Babington (*Brit. Rubi*, p. 51), I find myself unable to accept the suggestion that the name *suberectus* should give place to *R. nessensis* Hall. In the absence of all specimens of Hall's plant (at Edinburgh, as at S. Kensington and Kew) his description would be quite inadequate to establish the identity of the two, even if, meagre as it is, it did not contain one character, "petiolis canaliculatis," which belongs to *fissus*, as distinguished from *suberectus*. The value of Anderson's testimony is destroyed by the fact that he knew nothing of *R. fissus*, which was not described until twenty years later.

R. SULCATUS Vest. No. in Set, 2. 9 v.-c. (3, 4, 9, 22, 36, 43, 69, 70, and "Perth").

R. PLICATUS W. & N. 44 v.-c. (2–6, 9–12, 14, 16, 17, 21, 22, 25–28, 34-36, 38–43, 46–49, 52, 57, 59, 62, 88, 92, 96–98, 102, 105-107). [13, 15, 18, 20, 39, 55, 58, 63–65, 67, 69, 70, 72, 74, 81, 87, 89–91, 100]. I.

Var. b. *hemistemon* (P. J. Muell.). 5 v.-c. (6, 17, 27, 38, 109). [59, 88]. Still very imperfectly known by us in England.

R. ROGERSII Linton, *Journ. Bot.* 1894, 213, 214. 5 v.-c. (3, 5, 27, 40, 57). I.

R. NITIDUS W. & N. No. in Set, 3. 13 v.-c. ("Cornwall," 3, 4, 9, 11, 17, 22, 34, 42, 43, 48, 49, 52). [8, 14, 36, 58]. On this and on the two next plants reference should be made to Dr. Focke's remarks in *Journ. Bot.* 1890, 100. By the var. "b. *hamulosus* P. J. Muell." of *Lond. Cat.* ed. 8 (*Journ. Bot.* 1886, 218), I believe a white-flowered form of the typical German plant to have been referred to. But the plant recorded in some of the counties enumerated above is much less marked than this, and therefore not so easily distinguished from *R. plicatus.*

R. INTEGRIBASIS P. J. Muell.? No. in Set, 4. 3 v.-c. (6, 9, 11). This appears to me to be most readily separable from *nitidus* forms, as from all other true *Suberecti*, by the sepals externally hoary.

R. HOLERYTHROS Focke. *R. nitidus* Genev. *Ess. Mon.* p. 311. 3 v.-c. (3, 17, 22). This is the strong handsome plant with very large flowers referred to in my Essay, *Journ. Bot.* 1892, 110 (under *R. integribasis*), as abundant on S.W. Surrey heaths and commons. Dr. Focke took specimens from there and from Boar's Hill, Berks, last summer, and has since named it as above. It may be distinguished from its allies, *R. integribasis*, *R. affinis*, and *R. villicaulis*, by the following characters:—St. striate, slightly hairy. Prickles many, strong, much compressed, mostly rather declining. *Leaves large*, 5-nate-digitate. *Lts. wide-spreading*, irregularly toothed, *very soft beneath with short white hairs; term. long-petioluled, nearly oval-acuminate.* Prickles on flowering shoot falcate. Panicle usually short, with the *topmost branches very crowded and few-flowered*, though in luxuriant plants becoming cymose (like the lower ones). *Fl. very showy. Sep.* mostly with long cuspidate-acuminate points, *externally greyish green, with felt and long hair* (like the pedicels and rachis), reflexed after flowering. *Petals very large*, oval or obovate, pinkish, as ultimately are the styles and long stamens (whence Dr. Focke's name).

R. OPACUS Focke. 3 v.-c. (6, 9, 15). [3, 11, 107]. Quite Dr. Focke's plant for v.-c. 6, 9, and 15. Probably the same in S. Hants and E. Sutherland; but the plant locally so abundant in S. Devon (*Journ. Bot.* 1890, 100) seems nearer to my *R. affinis* var. *Briggsianus*, though not identical with it. Some of our other plants formerly placed under *R. opacus* belong to *R. Rogersii* (see above).

R. AFFINIS W. & N. *Journ. Bot.* 1890, 101. No. in Set, 5. 14 v.-c. (3–6, 9–11, 14, 16, 17, 27, 34, 52, 95). [77, 88, 89]. I. Formerly quite misunderstood by us in England, the plant which was usually so named being *R. villicaulis* Koehl. var. *Selmeri* (Lindeb.).

Var. b. *Briggsianus* Rogers, *Journ. Bot.* 1894, 42. 7 v.-c. (2–5, 9, 49, 52). I think certainly best placed as a var. of *R. affinis*, though it comes near to some of the plants which Dr. Focke associates with *R. nitidus.*

R. CARIENSIS Rip. & Genev. No. in Set, 53. 3 v.-c. (4, 5, 9).

R. LATIFOLIUS Bab. 6 v.-c. (35, 52, 83, 84, 88, 97). [89]. *B. E. C. Rep.* 1893, 406.

Dr. Focke tells me that he has seen no British *R. ammobius* Focke. He considers the Perth plant so named by Prof. Babington to be a form of *R. nitidus.*

R. IMBRICATUS Hort. No. in Set, 8. 11 v.-c. (2–5, 9, 10, 17, 22, 34–36).

R. CARPINIFOLIUS W. & N. No. in Set, 28. 28 v.-c. (3, 5, 6, 8, 9, 11, 12, 16, 17, 21, 22, 34–36, 38–40, 42, 43, 49, 55, 57, 62, 63, 97, 98, 103, 105). [15, 41]. I.

I omit *R. stenophyllus* P. J. Muell. (described as a var. of *R. carpinifolius* in my Essay, *Journ. Bot.* 1892, 143) and *R. montanus* Wirtg., as being too doubtfully British.

R. INCURVATUS Bab. No. in Set, 7. 20 v.-c. (4, 9, 13, 17, 22, 36, 45, 46, 48–52, 57, 60, 71, 76, "Perth," 105, 110). I.

R. LINDLEIANUS Lees. No. in Set, 29. 64 v.-c. (2–12, 15–18, 20–28, 31, 32, 34–43, 45, 46, 48, 49, 50, 52, 55–66, 69–72, 74, 76, 86, 87, 99, 100). A very wide-spread constant species, probably absent from very few of our vice-counties. I.

R. ERYTHRINUS Genev. No. in Set, 58 (exclusive of the specimens so numbered from "Bailie Gate, Dorset," which prove to be *R. Questierii* Lefvr. & Muell.). 16 v.-c. (2–7, 9, 11, 17, 25, 34–36, 40, 41, 49). *R. argenteus* W. & N. is omitted as too uncertain.

R. DURESCENS W. R. Linton. No. in Set, 57. 1 v.-c. (57).

R. RHAMNIFOLIUS W. & N. (sp. collect.), *Journ. Bot.* 1890, 101. 61 v.-c. (1–12, 14–19, 21–28, 32–40, 42, 46, 48–52, 54–58, 62–64, 69–71, 73, 74, 85, 88, 92, 95, 97, 98). I. Now that Dr. Focke has seen more of our plant in various parts of England, he considers it a well-marked form, not identical with his var. *stenoplos*, though nearer to it than to the type (his "*germanicus*"). He sees no occasion for giving it a varietal name, and says (*in litt.*, Dec. 1893), "It will be impossible to name every single form of the aggregate *rhamnifolius.*"

R. NEMORALIS P. J. Muell. *Journ. Bot.* 1894, 42. No. in Set, 56. 4 v.-c. (1, 9, 11, 36). Will surely be found in other counties.

Var. b. *glabratus* Bab. (as var. of *R. macrophyllus* in *Lond. Cat.* ed. 8), *Journ. Bot.* 1894, 43. No. in Set, 34. 6 v.-c. (34, 36, 38, 46, 48, 49). [23, 86].

Var. c. *Silurum* A. Ley, *Journ. Bot.* 1894, 142. 9 v.-c. (6, 34, 36, 42–44, 46, 47, 49).

R. PULCHERRIMUS Neuman. *R. polyanthemos* Lindeb. "*R. Maassii* Focke," *Lond. Cat.* ed. 8. *Journ. Bot.* 1890, 102, 131, 166. Inclusive of the white-flowered eglandular form provisionally separated from it as "*R.? dumosus* Lefv." in my Essay, *Journ. Bot.* 1892, 114, and also of the "*R. Muenteri*" Auct. Brit. No. in Set, 54. 49 v.-c. (2–18, 21–23, 25–28, 34–36, 38–40, 43, 49, 52, 55–58, 61–63, 65, 69, 70, 73, 97, 98, 103, 105, 110). [74]. I. Locally most abundant, especially on sandy commons in the south, and probably altogether absent from very few counties. The chief constituent in our old "*R. umbrosus* Arrh." I still leave under it (with the MS. name of var. *setosus* suggested by the Rev. A. Ley) a beautiful glandular and aciculate form with roundish greyish leaflets, which I have seen in good quantity in N.E. Yorks, Berks, and N. Hants, and received from W. Kent (*Wolley Dod*) and Surrey (*A. Ley*); see *Journ. Bot.* 1894, 41.

R. Lindebergii P. J. Muell. *Journ. Bot.* 1892, 114. No. in Set, 55. 11 v.-c. (34, 36, 39, 42, 43, 55, 57, 62, 64, 65, 88).

R. dumnoniensis Bab. *Journ. Bot.* 1890, 338, 339. No. in Set, 27. 19 v.-c. (1–6, 9, 11, 12, 14, 22, 23, 34, 36, 49, 52, 97, 98, 103). The more I see of this the more my conviction grows that it must be kept apart from *R. rhamnifolius*, coming in between it and *R. villicaulis.*

R. mercicus Bagnall, *Journ. Bot.* 1892, 372. No. in Set, 31. 2 v.-c. (38, 57). [43]. Not really yet found in Staffordshire, as was supposed by Mr. Bagnall. Mr. Griffith's Carnarvonshire and Anglesey plant, placed here by Dr. Focke (*B. E. C. Rep.* 1894, 405), can only be associated with *R. mercicus*, I think, as a very strongly marked var., differing from it more decidedly than the following plant.

Var. b. *bracteatus* Bagnall, *Journ. Bot.* 1894, 187. 1 v.-c. (38).

R. villicaulis, sp. collect. 52 v.-c. (2–9, 11, 12, 16, 17, 18, 22, 27, 33, 35, 36, 38, 39, 40, 42, 46–49, 52, 54–60, 62–65, 69, 70, 72, 77, 86, 88, 89, 96–98, 103, 105, 106, 108).

a. *R. villicaulis* Koehl. 2 v.-c. (106, 108). The typical plant, I suppose, and apparently different from all English forms known to me, though coming very near to var. *insularis* (F. Aresch.).

Var. b. *Selmeri* (Lindeb.), *Journ. Bot.* 1894, 43 (for this and the two next vars.). 46 v.-c. (the same as those given above for the species collectiva, *except* 17, 33, 54, 72, 106, 108). I. One of our most widely spread and easily recognised brambles, usually abundant and luxuriant on our sandy heaths.

Var. c. *insularis* (F. Aresch.). 7 v.-c. (9, 39, 49, 52, 72, 97, 106).

Var. d. *calvatus* Blox. (as var. of *R. Salteri* Bab. in *Lond. Cat.* ed. 8). 5 v.-c. (17, 38, 39, 55, 57).

R. rhombifolius Weihe. No. in Set, 9. 11 v.-c. (5, 6, 11, 17, 18, 22, 32, 36, 49, 56, 57). [110].

(To be continued.)

FRANCIS BUCHANAN WHITE.

Francis Buchanan White was born in Perth on March 20th, 1842, where his father, Dr. Francis J. White, who still lives in Perth, retired, was for many years one of the leading medical practitioners. He studied medicine in the University of Edinburgh, taking the degree of M.D. in 1864. His thesis, which received commendation, showed the bent of his mind, the subject being "On the Relations, Analogies, and Similitudes of Insects and Plants." Throughout his life he preserved his broad interest in natural science, his inclination tending much more to the study of nature out of doors than to the exercises of the laboratory and the specialisation that now so largely threaten to leave no place for the wider outlook, more healthy though less minute, of the older type of naturalist. But while thus most in sympathy with the latter type, he showed himself to be a most accurate worker in several lines, usually distributed among different specialists. Numerous publications from his pen demonstrate his minute acquaintance with the structure and the biology of various groups both of insects and of plants, as well as the width of his knowledge of a more general kind, not only in zoology and botany, but also in geology. He was probably unequalled in his knowledge of the natural history (in the wide sense) of Scotland, largely gained during residence for a time in various localities from Colvend, on the Solway Firth, to Strathglass, in Inverness. But while thus familiar with many parts of Scotland, he devoted his energies with especial zeal to the investigation of his native county. There is probably no part of it, however difficult of access, that he had not visited, and of each locality he noted, so far as opportunity permitted, the characteristic features and the more interesting animals and plants.

He also endeavoured to secure the goodwill and co-operation of others in the study of the natural history of Scotland; and with this aim he took a leading part in the formation, in 1867, of the Perthshire Society of Natural Science. From that date onwards he was officially connected with this Society, during many years as its President, and for a shorter period as its Secretary. His relation to the continued progress of the Society in numbers, in usefulness, and in prosperity, which has brought it into the front rank of local Societies, and has equipped it with excellent rooms, a library, and an admirable local museum, is shown by the following resolution, passed on Dec. 13th, 1894:—"The Society records with profound regret its sense of the irreparable loss which it has sustained by the death of Dr. F. Buchanan White, F.L.S., F.E.S., who was one of its founders, and who, during all the years of its existence, has guided its affairs with untiring devotion. In the service of the Society he spared neither time nor labour, and his large store of scientific knowledge was ever at the disposal of its members. To his energy and skill are mainly due both the reputation which the Society and its museum have acquired, and the popularity which the study of natural science has gained in our city and county." His addresses as President and his reports as Secretary dealt either with the progress of the Society and its museum, or with work requiring to be done by the Society; and, whatever their subject, were always suggestive and helpful. He took a leading part in the excursions of the Society, that have done so much to advance its aims; and on his initiation the Perthshire Mountain Club was formed as a branch of the Society to promote the exploration of the mountains of the county by one or more excursions to them annually. He was also one of the founders of the Scottish Cryptogamic Society and of the East of Scotland Union of Naturalists' Societies.

In 1871 he induced the Perthshire Society to set on foot the *Scottish Naturalist*, which he edited until the close of 1882. After a time the Society found it desirable to issue annual *Proceedings* and *Transactions;* and to these Dr. White contributed frequently (in addition to the addresses and reports already referred to), besides editing them.

His published papers and notes are numerous, extending over a wide field in Zoology and in Botany, and are scattered through numerous journals, though a large proportion of them appeared in those named above. We must restrict our notice here to some of those relating to botanical subjects; but it is proposed to give in the *Annals of Scottish Natural History* as full an enumeration of at least the more important papers as can be now obtained. His earliest botanical contributions seem to be those in the *Trans. Bot. Soc. Edinb.*, between 1866 and 1870, relating to flowering plants and to mosses. His attention was afterwards chiefly directed to the flowering plants, more especially to those of Perthshire, and numerous communications to the *Scottish Naturalist*, the *Proceedings of the Perthshire Society of Natural Science*, and the *Journal of Botany* bear witness to his acuteness in discriminating species and varieties not formerly known to occur in Scotland. The British species of *Salix*, and their numerous intermediates, were made by him the subject of very minute and exhaustive study, the general results of which were embodied in "A Revision of British Willows," read before the Linnean Society (of which he became a Fellow in 1873) in June, 1889, and published in that Society's *Journal* (*Botany*), xxvii. 333–457; while other papers more especially confined to the Willows of the East of Scotland were published in the Scottish journals.

That he did not limit his attention to flowering plants is shown by occasional papers on ferns, mosses, and fungi, and by frequent references in some of the series of Berkeley and Broome's well-known "Notices of British Fungi" to specimens of fungi, rare or not previously found in Britain, forwarded by him.

For several years he had been engaged in the preparation of a *Flora of Perthshire*, and this led to a very careful investigation of the plants of the county, and supplied material for "A Preliminary List of the Fungi of Perthshire," and "A Preliminary List of the Flowering Plants and Ferns of Perthshire," both of which were published in the *Scottish Naturalist* during the years 1879–1882, extending together to over eighty pages. The *Flora* would have been published several years ago, but for Dr. White's efforts to make it minutely accurate. Year after year he sought to clear up points on which he felt that additional information was desirable, and no season passed without some real progress being made in this direction. It is fortunate that the *Flora* has been left by him in such a state as to permit of its publication at an early date.

Passionately fond of mountaineering and of active exercise, he undertook excursions that involved long and exhausting tramps over moor and hill, with frequent exposure to inclement weather. For years he seemed not to feel fatigue; but latterly he suffered from rheumatism, though even this did not put a stop to his excursions. Ultimately his heart became affected, and for several months the symptoms steadily increased in severity, confining him almost entirely to the house and garden. His death at Perth on December 3rd, 1894, is a heavy blow to the study of the Zoology and Botany of Scotland, and a grief to those who had the privilege of personal friendship with him, and who knew his sterling worth as a man.

J. W. H. Trail.

NEW AMERICAN ALGÆ.

By W. West, F.L.S., and G. S. West, A.R.C.S.

Pediastrum duplex Meyen. (*P. pertusum* Kütz.), var. gracillimum, n. var. Var. cellulis gracillimis, periphericis arcuatis cum processibus duobus longis tenuibus emarginatis ad apices; cellulis reliquis 4-radiatis; lacunis permagnis. Diam. usque ad 87 μ.

This variety is similar to var. *reticulatum* Lagerh. (Bidrag till Ränned. Stockholmstr. Ped., Protoc., Palmell., *Ofvers. af K. Vet.-Akad. Förh.*, 1882, p. 56, t. ii. f. 1), but the cells are much more slender, the processes narrower and with emarginate apices, and the spaces between the cells are very much larger.

Tetraedron tortum, n. sp. T. magnum, irregulariter triangulare, contortum, lateribus curvatis, convexis, subconvexis, vel concavis sed in medio leviter convexis; angulis leviter productis, spina longa valida acuta vel acutissima ad angulum unumquemque instructa; membrana crassa glabra. Diam. sine spin. 73–81 μ, cum spin. 108–117 μ; crass. circ. 42–44 μ.

The large size, peculiar bent and twisted triangular form, furnished with the strong spines at the angles, distinguish this species from all others.

Radiofilum apiculatum, n. sp. R. cellulis transverse elliptico- vel rotundo-rhomboideis, angulis lateralibus subapiculatis, cellulis conjunctis arcte in filis longis flexuosis. Contentum chlorophyllosum cellularum cum pyrenoidibus magnis singulis. Long. cell. 4–4·4 μ; lat. cell. cum apic. 4·6–5·6 μ.

The smaller somewhat rhomboidal cells with lateral apiculations distinguish this species from the only other one of the genus, *viz.*, *R. conjunctivum* Schmidle (Aus der Chloroph.-Fl. der Torfstiche zu Virnheim, *Flora oder allg. Bot. Zeitung*, 1894, Heft 1, p. 47, taf. vii. f. 4, 5). The filaments of *R. apiculatum* are long and flexuose, as distinguished from the short fragile filaments of *R. conjunctivum;* moreover, the cells are not so remote as in the latter species, and are arranged more or less in pairs, the minute apiculi on the cells of each pair often being directed slightly towards each other.

The material was not in the living state, but traces of a gelatinous investment with a radiating structure were observed.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from p. 18.)

Simethis bicolor Kunth, Enum. iv. 618 (1843). **1847.** Found by Miss Charlotte Wilkins, of Westbury, "amongst heath and furze in a lonely spot [Poole Heath] more than two miles from Bourne" [Bournemouth, Hants].—Gard. Chron. 1847, 467.

Allium Ampeloprasum L. Sp. Pl. 295 (1753). **1688.** "*A. montanum major Anglicum* Newtoni. In parva insula Holms dicta supra Bristolium in Sabrinæ æstuario copiosè provenit."—Ray Hist. ii. 1126. A specimen collected by Newton in this locality is in Herb. Sloane, clii. 153.

A. Scorodoprasum L. Sp. Pl. 297 (1753). **1690.** "In montibus Westmorlandicis observavit D. Lawson. In Troutbeck holm by Great Strickland."—Ray Syn. i. 165. ["I received a plant of it from Mr. Tho. Edwards, apothecarie in Excester, who found it growing in the west parts of England."—Ger. 143.]

A. sphærocephalum L. Sp. Pl. 297 (1753). **1847.** Found in 1847 by H. O. Stephens on St. Vincent's Rocks, Bristol.—Phyt. ii. 929.

A. vineale L. Sp. Pl. 299 (1753). **1548.** "Crowe garlike . . . groweth in the fieldes."—Turn. Names, A vj, back. "In middowes and feldes in every countrey."—Turn. i. 26 (1551).

A. oleraceum L. Sp. Pl. 299 (1753). **1688.** "Invenimus inter segetes Notleiæ in Essexia."—Ray Hist. ii. 1119.

A. Schænoprasum L. Sp. Pl. 301 (1753). **1777.** "By Fast-Caste, on the borders of Berwick-shire. Dr. Parsons."—Lightf. Fl. Scot. 180.

A. sibiricum L. **1843.** "Rocks and cliffs near the sea in Cornwall. Tintagel. Rev. R. [W.] T. Bree. Between Kynance Cove and Mullion."—Bab. Man. ed. 1, 307.

A. triquetrum L. Sp. Pl. 300 (1753). **1875.** "Most abundant near Helston, Cornwall . . . J. Cunnack, 1874."—Rept. Bot. Exch. Club, 1872-4, 43; Journ. Bot. 1875, 378.

A. ursinum L. Sp. Pl. 300 (1753). **1551.** "Groweth in woddes about Bath."—Turn. i. 26 (78).

Muscari racemosus Mill. Dict. ed. 8 (1768). **1805.** "Fields at Hengrave [Suffolk]; and plantations at Cavenham. Sir T. G. Cullum."—Bot. Guide, 548.

Scilla autumnalis L. Sp. Pl. 309 (1753). **1629.** "Groweth wilde in many places of England. I gathered divers rootes for my garden, from the foote of a high banke by the Thames side at the hither end of Chelsey, before you come at the Kings Barge-house."—Park. Parad. 132.

S. verna Huds. Fl. Angl. ii. 142 (1778). **1650.** "At the Kings-end neere Dublin. Mr. Heaton."—How, Phyt. 60.

S. festalis Salisb. Prod. 242 (1796). **1548.** "Muche in Englande about Syon and Shene" (Middx.).—Turn. Names, D vj.

Ornithogalum pyrenaicum L. Sp. Pl. 306 (1753). **1634.** "Between Bathe and Bradford not farre from little Ashley."—Johns. Merc. Bot. 55.

Fritillaria Meleagris L. Sp. Pl. 304 (1753). **1736.** "In Maud-fields near Rislip-Common (Ruislip, Middlesex), observ'd above 40 years by Mr. Ashby of Breakspears."—Blackst. Fasc. 29.

Gagea fascicularis Salisb. in Ann. Bot. ii. 555 (1806). **1570.** "Angliæ nemorosis Sommerseti collegimus."—Lob. Adv. 56. "In a cornfield in Winetaunton [Wincanton], Sommersetshire."—Merrett, 89 (1666).

Tulipa sylvestris L. Sp. Pl. 305 (1753). **1790.** Observed by "Rev. Mr. Mathew" [Mr. William Matthew] in an old chalk-pit near Bury (Suffolk), and by Mr. H. Rose and J. E. Smith in a chalkpit near Norwich.—E. B. 63, 85.

Lloydia alpina Salisb. in Trans. Hort. Soc. i. 328 (1812). **1696.** "In excelsis rupibus montis Snowdon . . . D. Lhwyd."—Ray, Syn. ii. 233.

Colchicum autumnale L. Sp. Pl. 341 (1753). **1551.** "I have sene it growe in the West cuntre besyde Bathe."—Turn. i. 62.

Narthecium Ossifragum Huds. Fl. Angl. 127 (1762). **1570.** "Angliæ humentibus paludisque."—Lob. Adv. 46. "Groweth in moist and marish places neere unto the towne of Lancaster . . . Master Thomas Hesket," &c.—Ger. 88 (1597).

Tofieldia palustris Huds. Fl. Angl. ed. 2, 175 (1778). **1677.** "Found about two miles north of Barwick near a small rivulet."—Ray Cat. ii. 30.

Paris quadrifolia L. Sp. Pl. 367 (1753). **1548.** "Much in Northumberland in a wodde besyde Morpeth called Cottingwod."—Turn. Names, A v, back.

Juncus bufonius L. Sp. Pl. 328 (1753). **1597.** "Gramen junceum. Rush grasse. In salt marshes neere unto the sea."—Ger. 4.

J. trifidus L. Sp. Pl. 326 (1753). **1777.** "I found it upon the summits of the highland mountains to the south of Little-Loch-Broom in Ross-shire," &c.—Lightf. Fl. Scot. 184.

J. squarrosus L. Sp. Pl. 327 (1753). **1640.** "Found by Dr. Lobel upon a high hill in Wales called Bewrin, in sundry wet and moorish groundes, in many places thereabouts."—Park. Theatr. 1194.

J. compressus Jacq. Vindob. 235 (1770). **1660.** "In pratis & ad semitas."—R. C. C. 68.

J. Gerardi Loisel. in Desv. Journ. Bot. ii. 284 (1809). **1818.** "In salsis copiose" ("*J. cœnosus*").—Bicheno in Linn. Trans. xii. 309.

J. tenuis Willd. Sp. Pl. ii. 214 (1799). **1810.** "Found by Mr. G. Don in 1795 or 1796 by the side of a rivulet, in marshy ground, among the mountains of Angus-shire."—E. B. 2174 ("*J. gracilis*"). Rediscovered in the parish of Cradley, in Herefordshire, in 1884, by Mr. R. F. Towndrow.—Journ. Bot. 1884, 91.

J. balticus Willd. in Mag. Berol. 298 (1809). **1821.** "Sands of Barry, near Dundee. Mr. [T.] Drummond."—Hook. Fl. Scot. 104 ("*J. arcticus*").

J. filiformis L. Sp. Pl. 326 (1753). **1688.** "In Westmorlandia non procul ab oppido Ambleside dicto invenit D. Newton." —Ray Hist. ii. 1305.

J. glaucus Ehrh. Beitr. vi. 83 (1791). **1597.** "Upon drie and barren groundes."—Ger. 31 ("*J. acutus*").

J. diffusus Hoppe in Flora, i. 186 (1819). **1843.** Notice of specimen sent to Mr. W. Sonder, of Hamburg, from Kincardineshire.—Ann. N. H. xi. 78. See Flora Hertfordiensis, 307.

J. effusus L. Sp. Pl. 326 (1753). **1570.** "In Anglia potissimum."—Lob. Adv. 44.

J. conglomeratus L. Sp. Pl. 326 (1753). **1634.** "Iuncus lævis glomerato flore, Lob."—Johns. Merc. Bot. 45.

J. maritimus Lam. Encyc. iii. 264 (1789). **1640.** "On many of our English coasts."—Park. Theatr. 1194.

J. acutus L. Sp. Pl. 325 (1753). **1641.** "Juncus maritimus acutus sive capitulis Sorghi, Bauh. . . . . Pricking Sea Rush."—Johns. Merc. Bot. pars alt. 24. "In arenosis cumulis ad occidentale Cambriæ litus Merionethense copiosissime."—Ray Cat. 180 (1670).

J. supinus Mœnch. Enum. Hass. 296 (1777). **1670.** "On Hampstead Heath and elsewhere."—Ray Cat. 150. "Gramen junceum . . . the lesser varietie," "on the bogs upon Hampstead Heath," Ger. em. 4 (1633), was probably this.

J. obtusiflorus Ehrh. Beitr. vi. 83 (1791). **1724.** "In Peckham Field . . . Doody."—Ray Syn. iii. 433, 9. But see also Ray Syn. ii. 276, "Secunda species," &c., and Davies in Linn. Trans. x. 12.

J. pygmæus Rich. in Thuill. Fl. Par. ed. ii. 178 (1799). **1872.** "Near Kynance Cove, Cornwall."—W. H. Beeby, Journ. Bot. 1872, 337.

J. lampocarpus Ehrh. Calam. n. 126 (1791?). **1660.** In Cambridgeshire.—R. C. C. 68 ("Gramen junceum aquaticum Bauhini").

J. silvaticus Reich. Fl. Mæno-Franc. ii. 181 (1778). *J. acutiflorus* Ehrh. Beitr. vi. 82 (1791). **1632.** "South Heath Hampstead."—Johns. Enum.

J. castaneus Sm. Fl. Brit. 383 (1800). **1798.** "Primus in Scotia invenit D. Dickson" ("*J. Jacquini*").—Symons' Synopsis, 87. See Trans. Linn. Soc. xii. 322.

J. biglumis L. Sp. Pl. 328 (1753). **1777.** "On the top of Mal-ghyrdy, &c., in Breadalbane. Mr. Stuart."—Lightf. Fl. Scot. 1100.

J. triglumis L. Sp. Pl. 328 (1753). **1696.** "On the mountains of Wales. D. Lhwyd."—Ray Syn. ii. 275.

J. capitatus Weigel, Obs. Bot. 28 (1772). **1872.** Near the Land's End, Cornwall.—W. H. Beeby, Journ. Bot. 1872, 337.

(To be continued.)

SHORT NOTES.

Deschampsia discolor R. & S. in Salop. — Last June, at the meeting of the Midland Union of Natural History Societies at Ellesmere, Mr. F. Bellamy, of Oxford, collected some specimens of plants, which he brought me to look over. Among them was a form of the above grass, which he gathered near the mere.—G. Claridge Druce.

Rubi "new to Ireland." — In noting *R. Selmeri* as "new to Ireland" in last month's issue, Mr. Brenan overlooks *three* published records of its occurrence in this country—those of Rev. W. M. Rogers (*Journ. Bot.* 1894, p. 43), W. A. Shoolbred (*Irish Naturalist*, 1894, p. 148), and Rev. C. H. Waddell (*ibid.* p. 156). *R. micans*, on which Mr. Brenan bestows the same honour, has also been previously recorded from Ireland (*Journ. Bot.* 1894, p. 359).—R. Lloyd Praeger.

Wilts Records, 1894.—In preparing my list, I have to express my obligations to Messrs. J. G. Baker, Arthur Bennett, H. & J. Groves, James Saunders, and W. H. Beeby, to whom I must now add the Revs. W. Moyle Rogers and E. S. Marshall, for critical help. Plants which are new for only the north or south vice-county are so indicated. A very large number of additional localities for plants already recorded have been noted and verified during the past seven years, some of which are important enough for special notice on a future opportunity:—*Ranunculus Flammula* var. *pseudoreptans* Syme. 5. Hamptworth. — *Barbarea intermedia* Bor. 6. Clarendon. — *Lepidium Draba* L. 2. Melksham, *Rev. E. G. Wyld;* Heddington, *Miss Du Boulay.* — *Viola Reichenbachiana* Bor. (*flore albo*). 5. Farley. — *Saponaria Vaccaria* L. 9. Baverstock, *G. H. Penruddocke.* — *Silene conica* L. 7. Durrington, *Rev. C. S. Ruddle.* — *S. dichotoma* Ehrh. 6. Laverstock, "A good quantity of it," *F. O. Farney.* — *Geranium sylvaticum* L. 11. Stourton, "Bank by the roadside; perhaps an escape, but well established," *Miss E. Baker.* — *Trifolium filiforme* L. (S.W.). 5. Grimstead; Hamptworth; Landford; Plaitford; Bramshaw. 6. Clarendon. 10. Alderbury; Whaddon. — *Lathyrus tenuifolius* Roth. (S.W.). 10. Damerham, *Rev. E. F. Linton.* — *Potentilla procumbens* × *Tormentilla.* 5. W. Grimstead. 10. Alderbury. — *Rosa verticillacantha* Merat. (S.W.). 6. Wilbury. — *R. glauca* Vill. 6. Hurdcott. — *Epilobium montanum* × *roseum.* 5. W. Grimstead.—*E. roseum* Schreb. (S.W.). 1. Dilton Marsh. 5. E. & W. Grimstead; Clarendon; Redlynch; Whiteparish.—*Apium nodiflorum* var. *ochreatum* DC. 5. W. Grimstead. — *Galium verum* × *elatum* (*G. ochroleucum* Rockel). 10. Harnham. — *Doronicum plantagineum* L. 11. Mere, "Bank by the roadside, quite established," *Baker.* — *Centaurea solstitialis* L. (N.W.). 2. Melksham, *Wyld.* — *Leontodon autumnalis* var. *sordida* Bab. 10. Harnham. — *Melampyrum arvense* L. 2. Clyffe, *Rev. E. H. Goddard.* 5. Farley, *Miss Henderson.* — *Plantago Timbali* Jord. 6. Allington.—*Salix aurita* L. (N.W.). 2. Clyffe, *Goddard.* — *S. aurita* × *cinerea.* 10. Damerham, *Linton.* — *Populus tremula* var. *glabra* Syme. 10. Damerham, *Linton.*— *Setaria viridis* Beauv.

(S.W.). 6. Milford. 8. Fugglestone.—*Bromus commutatus* Schrad. (S.W.). 6. Laverstock. — *Nitella opaca* Agardh. 10. Alderbury. — *Conocephalus conicus* L. (*Fegatella conica* Raddi). 10. Alderbury (in fruit).—Edward J. Tatum.

NOTICES OF BOOKS.

Lehrbuch der Botanik für Hochschulen. By Drs. E. Strasburger, F. Noll, H. Schenck, and A. F. W. Schimper, of Bonn University. Gr. 8vo, pp. vi, 558; with 577 illustrations, in part coloured. Jena: G. Fischer. 1894. Price 7 Marks.

The first thought that occurs to us as we look through the latest text-book, the joint product of the botanical teachers at Bonn University, is, How is it managed? The title-page bears the names of botanists of the first rank, the book teems with good illustrations, some of which are new, the text is clear, and the paper is all that could be desired. And all for seven shillings! We are prepared to hear that the authors' services were gratuitous; that alas! almost goes without saying; but what about the publisher?

On the Continent it would seem that a botanist must produce a text-book in order to justify his existence. Generally he does it alone, and generally therefore the only valuable part is that in which he is at home. In the Bonn production the labour is divided, and we shall expect an excellence in accordance with the increased differentiation. A year ago we should have been envious—then we had no good modern text-book to compare with this; now we are only partly envious, for we have half such a one, and are eagerly expecting the remainder with the New Year. It is impossible to help comparing the two, as far as comparison extends, and the result, we are glad to say, is not altogether unfavourable to our native product. Dr. Vines has a power, rarely equalled, of bringing things together into a well-arranged and logical whole, and of giving from one point a comprehensive view over a wide area, which is of great advantage in a comparative study. For this reason we think the morphological section in the English text-book is more successful than Prof. Strasburger's contribution to the *Lehrbuch*, excellent though the latter undoubtedly is.

The book is divided into two parts: the first, "General Botany"; the second, "Special Botany." Each part falls into two sections: Part i. into a morphological section, by Prof. Strasburger and a physiological by Dr. Noll, while in Part ii. the Cryptogams and Phanerogams are separately treated, the former by Dr. Schenck, the latter by Prof. Schimper.

Morphology, or the study of the form, including as it does development and the mutual relations of members, would doubtless find a true explanation in phylogeny. But, as Strasburger observes, the phylogenetic origin of plant forms being only matter of surmise, we are driven to indirect methods for our morphological data. Such methods are those of comparison and the study of ontogeny, both of which will give results with a true scientific basis, the latter because it, in a measure, recalls phylogeny, the former because it enables us to connect divergent forms. If, he goes on to say, we are led on phylogenetic considerations to assume for a number of different structures a common origin, we term their hypothetical original form the "Grundform," while the derivatives of the Grundform are its Metamorphoses. "Thereby the study of plant metamorphoses, once only an ideal abstraction, is placed on a true basis." We are somewhat afraid, however, that the student who has perused the section will not feel quite happy about the value of ontogeny as a guide to morphology, and will search it in vain for many Grundforms. The paragraph on the "Ontogenie der Pflanzen" will at any rate show how very little we do know of the course of evolution or descent.

We like the second chapter better than the first. Prof. Strasburger seems more at home in the internal morphology or histology and anatomy, especially in treating of the cell and its contents, though *Protoplasm* would have made a better starting-point than *the Cell.* One cannot insist too strongly on the chambering of the protoplasm in contradistinction to a mere cell theory, with the unhappy bricks-in-a-wall illustration. However, we very soon come to an excellent account of the vital substance, though one aspect is not emphasised, namely, its action in the formation of substances like aleuron and mucilage. Evidence has been brought to show that these are the result of active secretion by the protoplasm, but this is not indicated in the text. The expressive term cœnocyte, adopted by Dr. Vines for the multinuclear cells of the Siphonaceous Algæ and their fungal allies, is not retained, nor are the laticiferous cells of Euphorbias mentioned in the same connection. We note on p. 68 the revival of the theory of growth by intussusception as necessary to explain many cases of growth of surface, as well as the formation of centripetally developed wall-thickenings.

In the discussion of tissue-systems we are glad to see the adoption, as a basis, of the obvious arrangement into epidermis, ground tissue, and vascular tissue; an arrangement more easily followed than one based on Van Tieghem's stele and its derivatives, which, even supposing it to be generally true, is extremely difficult for a student to understand and apply in his practical examination of plant tissues.

Physiology is considered under the following heads:—Physical and vital properties; the rigidity of the plant body; nutrition; respiration; growth; movements; and reproduction. One or two points call for remark. More evidence might have been adduced for the action of the living cells in the wood tissue in the ascent of the transpiration current; while the account of assimilation of carbonic acid gas, including the production of some form of carbohydrate, is extremely crude, the return to the atmosphere of a volume of oxygen equal to that of the carbonic acid gas absorbed being explained (p. 169) by an equation which assumes the direct formation of starch, *viz.*, $6CO^2 + 5H_2O = \underset{\text{Starch}}{C_6H_{10}O_5} + 6O_2$. Not a word is said about recent investigations in the importance of some form of sugar as one of the early results of such assimilation.

We thought, too, that the 5000–6000 years of the Cape Verde Baobabs and the Mexican Taxodiums belonged to the same category as the germination of ancient Egyptian seeds. A student's text-book should be above anything fabulous or doubtful. The modern student falls an easy enough prey to the hungry examiner, without such extraneous help.

In the Cryptogamic section we must refer to the subdivision of Thallophytes. Dr. Schenck spurns the old grouping into Algæ and Fungi, as of no phylogenetic worth, and adopts instead ten classes, *viz.*:—(1) Myxomycetes, (2) Schizophyta, (3) Diatomeæ, (4) Peridineæ (Dinoflagellatæ), (5) Conjugatæ, (6) Chlorophyceæ, (7) Phæophyceæ, (8) Rhodophyceæ, (9) Characeæ, (10) Eumycetes. Classes 3–8 include Algæ in the narrower sense, Class 10 similarly the Fungi. The Lichens follow as an eleventh class. Among the higher forms we notice *Isoetes* still in its old place near *Selaginella*, and not classed as a heterosporous eusporangiate fern allied to *Salviniaceæ* and *Marsiliaceæ*. This section is extremely well illustrated, and the same may be said of Prof. Schimper's contribution on the Phanerogams, which contains numerous blocks after Wossidlo.

One feature of the Special part is the introduction of coloured figures for many, but not all, of the poisonous plants, which, like the officinal plants, are honoured with a separate index. We are not sure that much is gained by this introduction of colour; the medical or pharmaceutical student is already too much given to mere spotting to deserve further tips in that direction. Occasionally, as in the figure of *Daphne Mezereum* (p. 463), the colour obscures the floral characters. The scheme of classification adopted for the Flowering Plants is not new to continental text-books. The families, which are the natural orders of the *Genera Plantarum*, are arranged in larger groups or orders somewhat comparable with the series of the Monocotyledons or the cohorts of the Dicotyledons to be found in Bentham and Hooker's work. On p. 398 the student is informed that there appears to be much evidence that the original Monocotyledons were grass-like and wind-fertilised; evidence, however, which is not forthcoming in the account that follows. We should like to see some mention of germination in considering the different families or groups. Are not characters "appearing early in the life of an individual" "of value for phylogeny"? Yet they are quite unnoticed. At any rate such an account would add to the interest and value of the description of a family. Take, for instance, the very characteristic mode of germination of an orchid seed, or the differences in structure and mode of exit of the embryo in *Gramineæ* and *Cyperaceæ* respectively, coupled with their marked constancy in one and the same family. Or again, the wonderful aftergrowth of the cotyledons so frequent in the family *Onagraceæ*, and so extremely rare elsewhere. We notice that the much debated Casuarina is included, though not without a protest, in *Amentaceæ*, the first order of the Choripetalous Dicotyledons; reference is, however, made to recent work on this genus and others of the order.

Finally, besides the two indices to which we have already referred, there is also an exhaustive general index, in which indication is given of the illustrations.

A. B. R.

A Manual of Orchidaceous Plants. Chelsea: James Veitch & Sons. 1887 to 1894. Two Vols. (in ten parts).

Messrs. James Veitch & Sons, the well-known nurserymen of Chelsea, are to be congratulated on having presented to the public, after seven or eight years of diligent labour and research, a work which will occupy a very prominent place among the vast amount of literature which has been devoted to the study of the great orchid family. The *Manual of Orchidaceous Plants* has been issued in parts at intervals since 1887, some of which have been noticed in these pages, and has been compiled to supply amateurs and cultivators of exotic orchids with a fuller account of the principal genera, species, and varieties cultivated under glass than is contained in the manuals hitherto in use. The actual author of the work is, we believe, Mr. Adolphus Kent, who has so far succeeded in his task that nearly a hundred genera with their more noteworthy species have been fully and accurately described. Having checked a large number of the specific descriptions from living specimens, it is a pleasure to be able to say that they are thoroughly trustworthy.

The orchids which are more generally grown, not only in this country, but on the Continent and in America, have naturally received greater attention than those which are comparatively little known. Thus considerable space is devoted to the Odontoglossums, Cattleyas and Lælias, Cypripediums, Dendrobiums, Oncidiums, Masdevallias, Epidendrums, Cœlogynes, Lycastes, Ærides, and the like, the species under each genus being described in alphabetical order to facilitate reference. We must confess, however, to a feeling of surprise not unmingled with regret at the absence of any references to such well-known genera as *Anæctochilus*, *Catasetum*, *Disa*, *Habenaria*, *Sobralia*, and a few others which have for years been represented in cultivation. The gorgeous tints and veinings of the foliage of the species of *Anæctochilus* have delighted hundreds of people, but as these gems are notoriously difficult to grow, their omission from a popular treatise may be justified. The same cannot, however, be said with regard to the large ivory-flowered *Catasetum Bungerothi* (which, by the way, Reichenbach insisted was identical with his *C. pileatum*), *C. fimbriata*, &c., *Sobralia macrantha*, *S. leucoxantha*, and *S. xantholeuca*. These are all found in every orchid collection of any pretensions, and it is to be regretted that they do not find a place in this valuable work, even at the risk of crushing out such genera as *Cochlioda*, *Cycnoches*, *Comparettia*, *Polystachya*, and *Eriopsis*.

The last part of the *Manual* is an extremely interesting one, and gives a general review of the orchid family. It contains a special chapter on the morphology of orchid flowers; the teratology has been treated by Dr. Masters, who has made a special study of what may be termed the inherent tendency of orchids to become monstrous under cultivation. The minute structure, as well as fertilisation and hybridisation, has also been ably discussed, while the pioneers of orchid culture have not been forgotten.

That botanists have always taken a keen interest in the *Orchideæ* may be gleaned from the fact that since the year 1753 as many as 153 different works have been issued on the subject—not including the one under notice. Messrs. Veitch have given a very full list of these in chronological order, which will be very useful to the orchid bibliographer.

The work is profusely illustrated with excellent woodcuts; the special admirable coloured maps showing the habitats of the principal genera, the rainfall, temperature, &c., add greatly to the general usefulness of the book. Each part contains a copious index, but the general index to the entire *Manual* is very far from satisfactory, and seems to be of little use, as the parts are not paged consecutively. Taken, however, as a whole, the *Manual* must be considered as a standard work on orchids, as it is not only a popular handbook, but scientifically accurate and historically correct.

J. WEATHERS.

ARTICLES IN JOURNALS.

Annals of Scottish Nat. Hist. (Jan.). — G. C. Druce, 'Notes on the Flora of Elphin.'— F. Crépin, 'Necessity for a new monograph of British Roses.'—E. F. Linton, 'Forms of *Alchemilla vulgaris.*'— A. Somerville, '*Cystopteris montana* in Stirlingshire.'

Bot. Centralblatt (No. 1: Dec. 28). — E. Knoblauch, 'Die Nomenclatur der Gattungen und Arten.' — G. von Istvánffi, 'Die Vegetation der Budapester Wasserleitung.'—(No. 2: Jan. 9). H. R. Schrötter-Kristelli, 'Ueber ein neues Vorkommen von Carotin in der Pflanze.' — (No. 3: Jan. 16). E. Knoblauch, 'Zur Kenntniss einiger Oleaceen-Genera.' — H. O. Juel, 'Vorläufige Mittheilung über *Hemigaster.*'

Bot. Gazette (Dec. 26). — F. D. Heald, 'Comparative histology of pulvini' (1 pl.).—G. E. Davenport, 'Two new Ferns from New England.'—G. Culbertson, '*Leguminosæ* of Siam.'—G. F. Atkinson, 'Intelligence manifested by swarm-spores of *Rhizophidium.*' — E. Coues, 'Wild rice of Minnesota.'

Bot. Zeitung (Dec. 16).—F. Oltmanus, 'Ueber einige parasitische Meeresalgen.'—F. Roth, 'Ueber das Verhalten der verholzten Zellwand während des Schwindens' (1 pl.).

Bull. Soc. Bot. France (xl.: Session extraordinaire, pt. 3). — F. Gay, 'Quelques Algues de Montpellier.' — X. Gillot, 'Erythrisme des fleurs blanches.' — J. Daveau, '*Fumaria media* Lois.' — G. de Saporta, 'Semis naturels en Provence.' — C. Flahault, 'Sur l'Institut de Botanique du Montpellier.'— —. Legrelle, 'Le Jardin des Plantes de Montpellier.'—G. Boyer et A. de Jaczewski, 'Flore mycologique de Montpellier.'

Bull, de l'Herb. Boissier (Dec.).—J. Briquet, 'Fragmenta Monographiæ Labiatarum' (*Acrocephalus Heudelotii*, sp. n.; Decades Menthavum novarum, &c.). — J. Müller, '*Arthoniæ* & *Arthothelii* species Wrightianæ in Cuba lectæ.'—G. Schweinfurth, 'Sammlung Arabisch-Æthiopischer Pflanzen.'

Bull. Torrey Bot. Club (Dec. 24).—E. L. Sturtevant, 'Notes on Maize.'—T. F. Allen, 'Japanese *Characeæ*.'—Id., '*Chara sejuncta*.' —G. N. Best, '*Orthotrichum gymnostomum*.'

Erythea (Jan.).—M. A. Howe, 'Early History of Hepaticology.' —E. L. Greene, 'Observations on *Compositæ*.'

Gardeners' Chronicle (Jan. 5).—*Cleyera Fortunei* Hook. f. (fig. 1), *Catasetum imperiale* Lind. & Cogn., spp. nn.—(Jan. 12). *Cineraria albicans* N. E. Br., *Pteris regia* Jenm., spp. nn. — (Jan. 19). *Asplenium Harrisi* Jenm., sp. n.

Irish Naturalist (Jan.). — H. & J. Groves, 'Distribution of *Characeæ* in Ireland.'

Journal de Botanique (dated Oct. 16, Nov. 1 & 16). — A. Franchet, 'Plantes nouvelles de la Chine occidentale.'—N. Patouillard & L. Morot, 'Quelques Champignons du Congo.'

Nuovo Giorn. Bot. Ital. (Jan. 10). — S. Sommier & E. Levier, 'I *Cirsium* del Caucaso.' — E. Bonnet, 'Le piante egiziane del Museo Reale di Torino.' — R. Cobelli, 'Spigolature della Flora di Serrada.' — C. Massalongo, 'Contributo alla entomocecidiologia italica.' — G. Arcangeli, 'Sopra una mostruosità del *Lentinus tigrinus*' (1 pl.).—A. Pistone, 'Di alcune cisti tannifere.'

Oesterr. Bot. Zeitschrift (Jan.). — J. Lütkemüller, 'Ueber die Gattung *Spirotænia*' (1 pl.). — J. v. Sterneck, 'Zur Kenntniss der Gattung *Alectorolophus*.' — R. v. Wettstein, '*Euphrasia*' (cont.). — P. Magnus, 'Zur weiteren Verbreitung zweier eingewanderter Pflanzen in Südtirol.'—K. Prohaska, 'Zwei Bastarde aus *Veronica Bonarota* & *V. lutea*.'—A. v. Degen, *Achillea Baldaccii*, sp. n. — F. Pax, *Hypochæris carpathica*, sp. n.

BOOK-NOTES, NEWS, &c.

Mr. Druce's *Flora of Berkshire* is announced as being in the press. It will be on the lines of the *Flora of Oxfordshire*, and has occupied most of the author's leisure since the completion of the last-named work in 1886. We hope that when this is completed Mr. Druce may be induced to turn his attention to Buckinghamshire: it would be very desirable that the plants of the three counties forming the West Thames subprovince should be treated by the same hands.

Those who think that the study of common British plants is exhausted will do well to read a paper "On the Fertilisation of some species of *Medicago* in Britain," recently published by Mr. I. H. Burkill in the *Proceedings of the Cambridge Philosophical Society* (vol. viii. pt. 3). The mechanism involved in the process of fertilisation is very carefully described, and a list of the insect visitors to each species is given. If space permit, we hope later to give a summary of this interesting paper.

The *Botanical Gazette* is angry with us because we have ventured to extract one or two of the gems of eloquence which have been displayed at the banquet and flower-sermon in connection with the Annual Meeting of the Trustees of the Missouri Botanic Garden, and duly chronicled in the yearly reports. The *Gazette* says that as these entertainments are embodied in the will of the founder, they have to be carried out. But our objection, so far as we have made any, was neither to the speeches nor the sermon, but to the fact that it was thought necessary to disfigure the excellent Reports by the printing of such rubbish; and we may presume that the Trustees are coming round to this view, for, as we pointed out (*Journ. Bot.* 1894, 350), the speeches are omitted from the last Report. The *Gazette* says we have only bestowed "faint commendation" upon the admirable papers which make up the bulk of these annual volumes; but the refutation of this statement will be found in the notices we have published (*Journ. Bot.* 1891, 308; 1892, 283; 1893, 219; 1894, 349).

Although the useful *Enumeration of Chinese Plants* is proceeding less rapidly than might be wished, it is gratifying to know that its completion may be looked for at a reasonably early date. The most recent part, issued last June, takes us into the *Urticaceæ*. We understand that the *Cupuliferæ* will be elaborated by the Director of Kew Gardens, and that Mr. Rendle will undertake the Grasses. A large number of novelties have been described since the first part of the *Enumeration* appeared (in 1886), and it is to be hoped that a supplement containing these will be added to the work when it is completed. Mr. Hemsley has decided that the *Xanthoxylum* collected by James Cunningham at Chusan, about 1700, and not named in the *Enumeration*, is a distinct species, and has promised to describe it for this Journal. It is figured by Plukenet (*Phytographia*, t. cccxcii, fig. 1) from a specimen preserved in Herb. Sloane, xciv, 190.

George Wall, whose death, at the age of seventy-three, took place at St. Thomas's Home, London, on Dec. 18th, 1894, a few days after his arrival in England from Ceylon, had been a prominent resident in that colony since 1846, as, at different periods, a leading merchant, planter, newspaper editor, and member of the Legislative Council. He was an intimate friend of the late Dr. Thwaites, and took up the study of Ferns with characteristic enthusiasm. He formed an extensive herbarium of the Ferns of the world, and was the author of two privately printed pamphlets on those of Ceylon—a Catalogue, "with notes by G. W.," in 1873, and a Check-List in 1879; and in 1874 he arranged the large collection of exotic species in the Peradeniya Herbarium, adding to it from his own stores. He joined the Linnean Society in 1872, but did not contribute anything to its publications. His name is commemorated in *Trichomanes Wallii* Thw., published in this Journal for 1885 (274), which is C. P. 3989. Mr. Wall was buried in Bromley Cemetery.

The 9th edition of the *London Catalogue* is in the press. The Rev. W. Moyle Rogers has arranged the *Rubi* for it, and the notes which he is publishing in this Journal will elucidate the views taken in the *Catalogue* of this troublesome genus, on which he is our chief authority. The new *Catalogue* will contain some startling though necessary changes in nomenclature, which we fear will be unwelcome to many.

We do not know why *Natural Science* is inspired to defend, by an odd sort of *tu quoque*, the numerous misprints in the *Geographical Journal*, to which we referred at p. 32: but in its February number (issued, like more mundane magazines, some days in advance of the month), an editorial comment deals with us very severely. It is pointed out—what we cannot, alas! deny—that misprints occur in the *Journal of Botany;* and a search in our last year's volume has discovered that certain African geographical names are very incorrectly spelt. We accept the corrections with becoming humility and gratitude, although we might fairly plead that the collector's writing of the names might be plainer, and only regret that they were not made sooner, in order that we might have taken notice of them in the proper place. Unluckily, we are not fortunate enough to have on our staff a distinguished naturalist whose acquaintance with unfamiliar African geographical names ensures their being accurately spelt.

But when *Natural Science* comes down upon us because we allow "Cameroons" to be also spelt "Camaroons," we are inclined to enter a plea for the defence. Certainly both forms are commonly employed; and is not a certain latitude allowed in the spelling of such names? The variants of what used to be called "Moulmein," for example, are very numerous; and if we come to Africa, we shall find that what our latest explorer, Dr. Gregory, now calls "Laikipia" began by "Likipia," and passed through "Leikipia" before it attained its present form; while the mountain which we first knew as "Kenia" has now become "Kenya" on the same authority. And how is the unhappy editor to decide between two travellers of eminence, when a place spelt by one "Kjandjabú" is named by the other "Chanjavi," or when the same river is written indifferently "Thikathika," "Thaka," "Thuaka," and "Athika"?* We are, it must be confessed, all of us sinners in the matter of spelling—even *Natural Science* miscalls Mr. Hugh Stannus "Stanners,"—and the best of us needs toleration. Yet ten mistakes in twenty-five lines, with a *nomen nudum* thrown in, still seems to us excessive in a scientific journal.

Prof. Sargent has reprinted from *Garden and Forest*, in a handsome volume entitled *Forest Flora of Japan*, the notes made during his journey in that country in 1892.

We are glad to announce the publication of the long-expected second edition of Mr. Mansel Pleydell's *Flora of Dorsetshire*, which arrives just as we are going to press.

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* See *Geographical Journal*, iv. 508.

SOME RECENTLY PUBLISHED DESMIDIEÆ.

By W. West, F.L.S., and G. S. West, A.R.C.S.

Gonatozygon reticulatum Turn. (*Freshw. Alg. of E. India*, p. 24, t. xx. f. 3). This is a form of *Œdogonium punctato-striatum* De Bary, the cells of which are very often rough on the margin, and dilated at each end. *G. leiodermum* Turn. (*l. c.* p. 24, t. xx. f. 5) is also very probably an *Œdogonium*.

Sphærozosma neglectum Schmidle (Algen aus dem Gebiete des Oberrheins, *Bericht. der Deutsch. Botan. Gesellsch.* 1893, p. 546, t. xxviii. f. 13). This is not a *Sphærozosma*, but belongs to the genus *Spondylosium* on account of the cells cohering by their apical surfaces, and not being joined by connecting structures. Hence we propose to call it Spondylosium neglectum.

In the paper on the Freshw. Alg. of W. Ireland, *Journ. Linn. Soc.* 1892, p. 116, the printer altered "*Spondylosium pygmæum* nob. (*Sphærozosma pygmæum* Cooke)" to "*Sphærozosma pygmæum* nob. (*Sphærozosma pygmæum* Cooke)," on account of its coming near the top of a fresh page. This has caused a good deal of confusion (*vide* Schmidle, Alg. aus dem Geb. d. Oberrh., *Bericht. d. Deutsch. Bot. Gesell.* p. 547; Borge, Unters. der neu ersch. Desmid. Litter., *Nuova Notarisia*, 1894). The real name of this species is *Spondylosium pygmæum* (Cooke) West (*vide* West, Alg. of Eng. Lake District, *Journ. R. M. S.* 1892, p. 718). Cooke was the original describer of this species (*Brit. Desm.* p. 5, pl. ii. f. 5), and placed it under the genus *Sphærozosma;* whereas it is a *Spondylosium*, under which genus we placed it in the Irish paper, though this was frustrated by the printers. It has nothing whatever to do with *Sphærozosma pygmæum* Rabh. (*Fl. Europ. Alg.* iii. p. 150), which is a *Cosmarium*—*C. pygmæum* Arch.

Sphærozosma sp. Heimerl (Desmidiaceæ alpinæ, *Verhand. Zool.-Bot. Gesellsch. Wien*, 1891, p. 589, taf. v. f. 1). This is a narrower form of *Spondylosium tetragonum* West (*Freshw. Alg. of W. Ireland*, 1892, p. 115, pl. xix. f. 2), and has no connection whatever with *Sphærozosma bambusinoides* Wittr. (= *Spondylosium pulchellum* Arch. var. *bambusinoides* (Wittr.) Lund.). Heimerl in his text has "*? Sphærozosma bambusinoides* Wittr."

Docidium baculum Bréb. The forms of *D. baculum* figured by Lütkemüller (Beobacht. über die Chlorophyllkörper einig. Desmid., *Oesterr. Bot. Zeitschrift*, 1893, Nr. i, u. 2, taf. ii. f. 9–15) are but forms of *Penium minutum* (Ralfs) Cleve. The chlorophyll of the latter is even more variable than figured by him, and is often arranged in a somewhat irregular and loose spiral band passing through the whole cell, whereas the chlorophyll of *Docidium baculum* consists of a band containing an axile row of large pyrenoids. Dr. J. Lütkemüller bases a number of remarks on the genera *Pleurotænium* and *Docidium on the supposition* that the examples which he figures belong to *Docidium baculum*, whereas his figures only represent *Penium minutum!*

In the same paper (taf. iii. f. 16–18) he figures what he considers to be *Cosmarium pseudoprotuberans* Kirchn., but none of his figures represent this species; they are nearer *C. ellipsoideum* Elfv. (or fig. 16 to *C. contractum* Kirchn.).

CLOSTERIUM ROBUSTUM Hastings (New Desmids from New Hampshire, *Amer. Monthly Micr. Journal*, July, 1892, p. 154, pl. i. f. 4). This is but a form of *Closterium Ehrenbergii* Menegh., and is not very well figured.

PENIUM LEWISII Turn. (Desmid Notes in *Naturalist*, Nov. 1893, p. 346, fig. 15). This is but a large form of *Penium exiguum* West (*Freshw. Alg. of W. Ireland*, p. 126, pl. xix. figs. 17, 18), differing from it only in size, and may hence be called *Penium exiguum* West, forma LEWISII.

PENIUM NAVIGIUM Turn. (*Freshw. Alg. of E. India*, p. 17, t. i. f. 9). It is a difficult matter to see the difference between this and some forms of *Penium digitus* Bréb. In gatherings from many places in W. Ireland (and also in N.E. Ireland) we have examined large quantities of *Penium digitus;* some of these were almost pure gatherings of it. Forms like *P. navigium* Turn. and *P. lamellosum* Bréb. were most abundant, amongst them being smaller and larger forms like those in Ralfs' *Brit. Desm.* t. xxv. f. 3, and we cannot but come to the conclusion that these "species" are forms of one and the same species.

CYLINDROCYSTIS OVALIS Turn. (*Freshw. Alg. of E. India*, p. 16, t. i. f. 5). From the perfectly elliptical form, and smooth thick membrane, this appears to us to be a species of *Oocystis*.

MICRASTERIAS KITCHELII Wolle, forma POLONICA Eichler & Gutw. (Nonn. Alg. Nov., *Krakow Akad.* 1894, p. 12, t. v. f. 41). This is much smaller and far too different in form to belong to *Micrasterias Kitchelii* Wolle, which is itself but a variety of *Micrasterias depauperata* Nordst. The lateral and vertical views are neither described nor figured by Eichler and Gutwinski. It is of such a marked form that it should be placed as a proper species, under the name of **M. polonica,** n. sp. Compare with *Eucosmium Kützingianum* Reinsch (*Algenfl. von Frank.* p. 123, taf. viii. f. iii.).

EUASTRUM VERRUCOSUM Ehrnb. var. CRUX-AUSTRALIS Racib. (*Desmidya w podrózy na okolo ziemi*, Krakow, 1892, p. 18, tab. vii. f. 26). This is a form of *Euastrum turgidum* Wallich, but the figures given by Raciborski are not sufficiently good to determine whether it is a variety of it or not. Fig. 26*c* sinistra and fig. 26*c* dextra are somewhat at variance with each other, and the two figures of the front view (fig. 26*a*) are somewhat tilted. It is not quite clear, from his figures, whether or not the Australian form has the additional projection above the basal angles.

EUASTRUM MAGNIFICUM Wolle, var. CRASSIOIDES Wolle (Hastings, New Desmids from New Hampshire, i., *Amer. Month. Micr. Journ.* July, 1892, p. 153, f. 1*a–c*). This is merely a form of *Euastrum crassum* (Bréb.) Kütz., both in front, lateral, and vertical views, and does not show any relationship to *E. magnificum*.

EUASTRUM OCTANGULARE Borge (Süsswasser Chlorophy. Archangel, *Bidrag till K. Sv. Vet.-Akad. Handl.*, Band 19, Afd. iii. no. 5,

1894. p. 34, t. iii. f. 38). This species, described and figured by Borge, differs in no way whatever from *E. Crameri* Racib. (*Desmidyje Nowe*, 1889, p. 32, t. ii. f. 5), and must therefore be placed as a synonym of the latter. Borge's form must have had a smooth membrane, as he does not describe whether it was punctate or not.

Euastrum Satkii Gutw. (*Flora Glônow Okolic Tarnopola*, Krakow, 1894, p. 60, tab. iii. fig. 42). This resembles very closely a species described by Reinsch as *Cosmarium asperulum* (Reinsch, *Contrib. fl. alg. Prom. Bon. Spei*, pl. vi. f. 9); it is probably but a form of the latter with rather fewer denticulations.

Euastrum Schmidleanum Eichler & Gutw. (*De Nonn. Alg. Nov.*, Krakow, 1894, p. 10, t. v. f. 32). This appears to us to be the simplest 2-celled form of some *Pediastrum*. The absence of an isthmus in the figures, as well as the wide apical notch, tend to prove this. But the most convincing proof is the comparison of Eichler and Gutwinski's figures with one in Cooke's *Brit. Freshw. Alg.* pl. xviii. f. 1*g*. There is no room for doubt that this figure given by Cooke and those of *E. Schmidleanum* represent the same stages in the development of a *Pediastrum*. The figures also indicate that the membrane was thinner than that of a Desmid under the same magnification. *E. Richteri* Schmidle (Aus der Chlorophy.-Fl. der Torfstiche zu Virnheim, *Flora oder allg. Bot. Zeitung*, 1894, Heft 1, p. 60, taf. vii. f. 25) does not seem to us to be one of the *Desmidieæ;* it is probably a *Tetraëdron*.

Cosmarium plicatum Reinsch, var. Scoticum Roy & Biss. (*Scottish Desmid.* 1893–4, p. 42, pl. ii. f. 2). This is the same thing as *C. plicatum* Reinsch, var. *hibernicum* West (*Freshw. Alg. of W. Ireland*, 1892, p. 142, pl. xxiv. f. 9). Schmidle (Einz. Alg. aus Bern. Alp., *Hedwigia*, 1894, p. 95) places this as var. *hibernicum* of *C. Holmiense* Lund.; but we hardly understand his reason for this change, if he has examined many specimens of the varieties of these two species, as the variety is much nearer to *C. plicatum* than to *C. Holmiense*, although it certainly connects *C. plicatum* with *C. Holmiense* var. *integrum* Lund.

Cosmarium alpinum Racib., var. helveticum Schmidle (Einz. Alg. aus den Bern. Alp., *Hedwigia*, 1894, p. 89, taf. vi. f. 11). This is but a form of *C. Garrolense* Roy & Biss. (*Scottish Desmidieæ*, 1893–4, p. 34, pl. ii. f. 4).

Cosmarium cyclicum Lund., var. truncatum Borge (*Süssw. Chlorophy.*, Archangel, 1894, p. 21). The description given by Borge of this variety, *viz.*, "dorso truncato leviter vel vix quadricrenato," applies exactly to *C. cyclicum* var. *angulatum* West (Freshw. Alg. of N. Yorks. in *Journ. Bot.* Oct. 1889, t. 291, f. 2; Algæ of Eng. Lake District, in *Journ. R. M. S.* 1892, p. 728, pl. ix. f. 19; *C. Nordstedtii* Reinsch, *Contrib. Alg. et Fung.* t. x. f. 11), and we see no reason for another varietal name. The figure of this variety in the *Algæ of the English Lake District* is more representative than that in the paper on N. Yorkshire Algæ.

Cosmarium ochthodes Nordst. var. amœbum West, Alg. of Eng. Lake District, *Journ. R. M. S.* 1892, p. 728, pl. ix. f. 31 (= *C. ochthodes* forma *granulosa* Lütk. *Desm. aus der Umgeb. des Atters.*

Oberöster. 1892, p. 21, taf. viii. f. 9; *C. ochthodes* forma *amœbagranulosa* Schmidle, Einz. Alg. Bern. Alp., *Hedwigia*, 1894, p. 92, taf. vi. f. 9). These three forms of *C. ochthodes* do not differ from one another sufficiently to admit of any separation, and they must therefore be placed together under the earlier name.

Cosmarium humile Gay, var. glabrum Gutw. (*Materyaly do Flory Glonów Galicyi*, Krakow, 1892, p. 27, t. iii. f. 14). This is only a form of *C. substriatum* Nordst. (Wittr. & Nordst. *Alg. Exsicc.* no. 977, 1889).

Cosmarium calcareum Wittr. as figured by Johnson (Some new and rare Desmids of U.S., i., *Bull. of Torrey Bot. Club*, July, 1894, pl. 211, f. 13). Johnson states that it "agrees well with Wittrock's description and figures," except in the central granules. We should say that fig. 13*a* agrees with Wittrock's figure chiefly in the central circle of granules, but even this is relatively much larger. The form of the semi-cells, the depth of the sinus and consequent breadth of the isthmus, as well as the disposition of the granules, seem to us very different from those of Wittrock's *C. calcareum*.

Cosmarium rectangulum Schmidle (Aus der Chlorophyceen-Flora der Torfstiche zu Virnheim, *Fl. oder allg. Bot. Zeitung*, 1894, p. 57, taf. vii. f. 23). Schmidle has described a species under the above name without noticing that this name had already been monopolised by Reinsch, the latter having described a *C. rectangulum* (Reinsch, *Contrib. Alg. et Fung.* taf. x. f. 9) in 1875. Hence we propose to call Schmidle's species C. Schmidlei.

Cosmarium trilobulatum Reinsch, var. excavatum Eichler & Gutw. (Nonn. Alg. Nov., *Krak. Akad.* 1894, p. 4, t. iv. f. 8). This is most certainly a variety of *Cosmarium venustum* (Bréb.) Arch., so we propose to name it *C. venustum* var. excavatum.

Cosmarium difficile Lütkemüller (Desmid. aus der Umgeb. des Atters. Oberöster., *Verhand. Zool.-Bot. Gesellsch. Wien*, 1892, p. 551, taf. viii. f. 3) and var. *sublæve* Lütk. correspond exactly in outline to one of the commonest forms of *Cosmarium Meneghinii* Bréb., met with in the British Isles and North America, and specimens received from Dr. Lütkemüller were by no means constant with regard to the number and position, or even presence, of the minute punctulations he describes, and even if present in some examples, they are not sufficient for a specific distinction.

Cosmarium minutum Benn. (Freshw. Alg. and Schizophyceæ of S.W. Surrey, *Journ. R. M. S.*, Feb. 1892. p. 10, pl. ii. f. 11). This is probably a small form of *C. polygonum* Näg., with more acute lateral angles; but the lateral and vertical views should have been given. However, as there is a *C. minutum* Delp. (*Desm. Subalp.* 1878), the name will in any case have to be changed.

Cosmarium minutissimum Heimerl (Desmid. alp., *Verh. Zool.-Bot. Gesellsch. Wien*, 1891, p. 600, taf. v. fig. 14). Heimerl describes a species under this name, but the name had previously been applied to another plant by Archer (*Q. J. M. S.*, 1877, p. 194; Cooke, *Brit. Desm.* p. 91); we therefore propose to name Heimerl's species C. Heimerlii.

Xanthidium Tylerianum West (List of Desm. from Massachusetts, *Journ. R. M. S.*, Jan. 1889, p. 19, pl. ii. f. 1–4, pl. iii. f. 14). This species was published by Hastings in *The Antimonopolist and Local Record* (Rochester, N. H.) for Oct. 20th, 1888, as *X. antilopæum* (Bréb.) Kütz., var. *truncatum* Hastings. Since then he has described it as *X. truncatum* "spec. nov." in the *Amer. Month. Micr. Journ.*, July, 1892, p. 154. Mr. Hastings' claim for priority must necessarily be disregarded, as his plant was only described in a local American newspaper! Hence *X. truncatum* cannot stand, as this was published three years after *X. Tylerianum*. Nevertheless Mr. Hastings designated his *X. truncatum* as "spec. nov." In connection with this Dr. Nordstedt (*in litt.*) justly remarks that "only once can a species be 'spec. nov.'"

STAURASTRUM ECORNE Turn., var. PODLACHICUM Eichler & Gutw. (Nonn. Alg. Nov., *Krak. Akad.*, 1894, p. 13, t. v. f. 47). This is much nearer to *S. subpygmæum* West (*Freshw. Alg. of W. Ireland*, 1892, p. 178, pl. xxiii. f. 8; et f. *glabra* West, New Brit. Freshw. Alg., *Journ. R. M. S.*, Feb. 1894, p. 11. pl. ii. f. 43) than to *S. ecorne* Turn. We should place it under *S. subpygmæum* as var. *podlachicum*. It agrees with *S. subpygmæum* in its large body and broad isthmus, and the angles are but a little more produced (and not capitate, as in *S. ecorne*).

STAURASTRUM BORGESENII Turn. (*Freshw. Alg. of E. India*, 1892, p. 110, t. xiii. f. 23). Before Mr. Turner's Indian paper appeared, Raciborski (*Desmidya w podrózy na okolo ziemi*, p. 29) gave the name *S. Borgesenii* to a plant previously called *S. stellatum* by Borgesen (*Desm. Bras.* p. 953, t. v. f. 53). Raciborski did this, as Reinsch had described a *S. stellatum*. We therefore propose to call Turner's above-named species S. TURNERI.

STAURASTRUM DE TONII Eichler & Gutw. (Nonn. Alg. Nov., *Krak. Akad.*, 1894, p. 18, t. v. f. 51). This is merely a common four-ended form of *S. furcatum* (Ehrnb.) Bréb.

STAURASTRUM PSEUDOPISCIFORME Eichler & Gutw. (Nonn. Alg. Nov., *Krak. Akad.*, 1894, p. 14, t. v. fig. 50). This is very much nearer *S. arcuatum* Nordst. in every particular than *S. pisciforme* Turn., and in fact chiefly differs from the former in the dorsal bifurcate processes being relatively larger. Hence we propose to call this form *S. arcuatum* Nordst., var. PSEUDOPISCIFORME (Eich. & Gutw.).

STAURASTRUM CRESCENTUM Hastings (Wolle, *Desm. U. S.*, new and enlarged edit., p. 153, pl. xlii. figs. 8–11). This is only a form of *S. forficulatum* Lund., var. *enoplon* West (Freshw. Alg. of Maine, *Journ. Bot.*, Dec. 1891, t. 315, f. 15). The *Staurastrum* figured by Wolle as *S. forficulatum*, pl. li. figs. 16–19, certainly does not belong to *S. forficulatum* Lund. It is probable that Mr. Hastings had never seen Lundell's figure of the latter species, and had been unable to identify the plant he was examining by Wolle's figures supposed to represent this species.

STAURASTRUM DUBIUM Eichler & Gutw. (Nonn. Alg. Nov., *Krak. Akad.*, 1894, p. xv. t. v. f. 52). This name has already been appropriated, a *Staurastrum* from Capel Curig being described as *S. dubium* West (Freshw. Alg. of N. Wales, *Journ. R. M. S.*, 1890,

p. 295, pl. ii. f. 28). We have Eichler and Gutwinski's species from the United States, and have had it described in MS. as S. SPICATUM for some time. Figures of American specimens of *S. spicatum* will shortly be published in a paper on N. American *Desmidieæ*.

STAURASTRUM MERIANI Reinsch forma Schmidle (Einzell. Alg. aus den Bern. Alp., *Hedwigia*, 1894, p. 91, taf. vi. f. 6*a–c*). This form, described and figured by Schmidle, certainly does not belong to *S. Meriani* (especially fig. 6*a*), but much more closely resembles *S. Kjellmani* Wille.

STAURASTRUM PODLACHICUM Eich. & Gutw. (Nonn. Alg. Nov., *Krak. Akad.*, 1894, p. 14, t. v. f. 49). This seems to be but a three-ended and smaller form of *S. oligacanthum* Bréb., with fewer denticulations, which appear to be more regular. It agrees with this species in all other respects, and might in consequence be called *S. oligacanthum* Bréb., var. PODLACHICUM.

STAURASTRUM POLYMORPHUM Bréb., var. PENTAGONUM Harvey (Freshw. Alg. of Maine, iii., *Bull. Torrey Bot. Club*, April, 1892, p. 122, pl. cxxvi. f. 14, 15), and *S. Sebaldi* Reinsch, var. *quaternum* Harvey (*l. c.* p. 123, f. 16, 17). We fail to see the resemblance between the figures of these two forms to either *S. polymorphum* or *S. Sebaldi*. The figures given by Harvey of *S. Arctiscon* (Ehrnb.) Lund., var. *crenulatum* Harv. (f. 18), and of *S. Saxonicum* Buln., var. *pentagonum* Harv. (f. 26, 27), are too crude to be of any value. On the same remarkable chart there is a *S. Avicula* Bréb., var. *brevispinum* Harv. (p. 122, f. 13), which "differs from the type in being larger (35 μ d) . . . , and the sides of the end view concave." We may point out that 35 μ is but the ordinary size of *S. Avicula*, and that a character of this species is in the concave sides of the vertical view.

THE PLANTS OF WELWITSCH'S *APONTAMENTOS*, &c.

By JAMES BRITTEN, F.L.S.

FROM time to time I have noticed, when consulting the *Index Kewensis*, the retention of various names, published by Welwitsch in his *Apontamentos*,* which have since been reduced as synonyms, and the omission of others which appear in that work and in his *Synopse explicativa*,† as well as in scattered notices of his travels. The plants intended can only be satisfactorily determined at Lisbon, where the study-set of Welwitsch's plants, with all his notes, is deposited, and at the British Museum, where there is a set scarcely if at all inferior to that at Lisbon, with copies of all the notes. Several of the names are *nomina nuda*, but in most cases a short diagnosis is attached, and these at any rate must take precedence over any subsequently published for the same plants, when those have been described as new.

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* Apontamentos phyto-geographicos sobre a flora da provincia de Angola na Africa equinocial servindo de relatorio preliminar ácerca da exploraçao botanica da mesma provincia, executada por ordem de sua Magestade Fidelissima pelo Doutor Frederico Welwitsch: in *Annaes do Conselho Ultramarino*, Dec. 1858, pp. 527–593.

† Synopse explicativa das amostras de Madeiras e drogas medicinaes . . . . colligidos na provincia de Angola enviados á Exposicão Internacional de Londres em 1862 . . . . por Frederico Welwitsch. Lisboa, 1862. 8vo, pp. 56.

With a view of making Mr. Jackson's great work as complete as possible, I have for some time been in the habit of noting in our copy of the *Apontamentos* such identifications as came in my way, and have lately completed the list, in order that it may be included in the appendix to the *Index Kewensis*. This has involved a consultation of Welwitsch's specimens in many instances, and as his numbers are now widely distributed, and many new species of his collecting have been described, I have found, as might have been expected, many recently published names for plants already named and more or less defined in the *Apontamentos* and *Synopse*. Both of these works are uncommon, and it seems worth while to publish the identifications of the plants named in them in a form which will allow more information to be given than is possible in Mr. Jackson's *Index*.

It has seemed to me convenient to bring all the names into one series, following the order of Bentham and Hooker. I have given first the name as it was published by Welwitsch; when, as often happens in the *Apontamentos*, he cites "Welw. Herb.," I have supplied the herbarium number before quoting the paper. When he gives no such reference, but the specimens in his herbarium are also named by him, they are referred to immediately after the citation of the *Apontamentos;* when no specimen bears the name, but the identity is clearly established by a comparison of diagnosis, locality, &c., I quote the herbarium number at the end of the paragraph. I have also cited the numbers under which the plant occurs in Welwitsch's carpological collection ("Coll. Carp."). The names to be retained on the ground either of priority or reduction are printed in small capitals; in the few cases in which the names have not been taken up or reduced, they appear only in italics.

Some of the plants enumerated in the *Apontamentos* are there referred to well-known species; others have no names attached. Neither of these are included in the following list. My object is not to publish what is already well known, or to describe novelties, or to enlarge our synonymy; I only wish to bring together and to correlate material which may be, and has been, overlooked.

It will be observed that two names, *Dactyladenia* and *Giganthemum*, antedate respectively the received genera *Griffonia* and *Camoensia*. I must leave it to others to decide whether the notes published by Welwitsch in connection with his names are so meagre as to justify their being set aside on the ground of insufficient diagnosis; but there can be no question as to the priority of these names, and no doubt as to the plants intended by them. I am glad to note that Dr. Kuntze, whose eccentricities have prevented due recognition of the large amount of careful work contained in his *Revisio Generum*, has restored (*l.c.* 797) Welwitsch's earlier name *Tumboa* for the plant generally known as *Welwitschia*; in the face of the full diagnosis of *Tumboa* published in Journ. Linn. Soc. v. 185 (1861), no other course could have been adopted, the author's consent to the substitution of *Welwitschia* (see Trans. Linn. Soc. xxiv. 3 (1863)) notwithstanding.

MONODORA ANGOLENSIS Welw. Apont. 587, no. 43; Syn. 31, no. 76; Herb. 774–6; Fl. Trop. Afr. i. 38; Trans. Linn. Soc. xxvii. t. i.

Nasturtium (*Clandestinaria*) *acaule* Welw. Herb. 1197–8; Apont. 589, no. 68 = N. HUMIFUSUM Guill. & Perr.

Barteria africana Welw. in Arch. Sc. Phys. xi. 200 (nomen) = BRASENIA PELTATA Pursh.

Cleome oleracea Welw. Herb. 9586; Apont. 555, no. 26 = GYNANDROPSIS PENTAPHYLLA DC.

COCHLOSPERMUM ANGOLENSE Welw. Apont. 566; Herb. 544–5, and in Fl. Trop. Afr. i. 113.

Lophostylis floribunda Welw. Apont. 562; Herb. 994 = SECURIDACA WELWITSCHII Oliv. in Fl. Trop. Afr. i. 135.

Actinostigma speciosum Welw. Apont. 560; Syn. 9, no. 12 = *Dactylanthera* Welw. Apont. 560 = SYMPHONIA GLOBIFERA Linn. f. var. AFRICANA Vesque in DC. Mon. Phan. viii. 230; Herb. 1052.

Bombycella bicolor Welw. Apont. 558, 589, no. 67; Herb. 4988–9 = HIBISCUS MICRANTHUS L.

HUGONIA MACROCARPA Welw. Herb. 1586; Apont. 585, no. 21 = *H. angolensis* Welw. Herb. ex Oliv. Fl. Trop. Afr. i. 271. The restoration of the earlier name for this plant prevents a certain ambiguity which might attach to that adopted by Prof. Oliver. In his Herbarium, Welwitsch named two plants *angolensis*—the one already cited (no. 1586) and no. 1584, which is described in Fl. Trop. Afr. i. 272, as *H. platysepala* Welw. MSS. Neither this name nor *H. macrocarpa* appears on Welwitsch's tickets, but the identity of no. 1586 with *H. macrocarpa* is clearly established by the description and geographical distribution.

Tribulus micans Welw. Apont. 566 = T. TERRESTRIS β. CISTOIDES ex Oliv. in Fl. Trop. Afr. i. 284. The name *micans* does not occur in Welw. Herb., but the description and locality of his 1579 entirely correspond with the notes *l. c.*

Biophytum Umbraculum Welw. Herb. 1612; Apont. 567, 590, no. 87 = B. SENSITIVUM DC. To his printed note in Apont. "*B. sensitivo* toto caelo diversa," Welwitsch has added in MS. "quoad aspectum sed vix specifice."

SWIETENIA ANGOLENSIS Welw. Herb. 1313; Apont. 561, 587, no. 46; Syn. 11, no. 21, 31, no. 75; Coll. Carp. 311; DC. Mon. Phan. i. 724.

Melia æthiopica Welw. Apont. 584, no. 5 = M. BOMBOLO Welw. *l.c.* 561; Syn. 12, no. 24; Herb. 1298; Coll. Carp. 310; C. DC. in DC. Mon. Phan. i. 451 (sphalmate *M. Bambolo*): in this Monograph (p. 451) *M. æthiopica* is erroneously cited as a synonym of *M. Azedarach*. Mr. Hiern (Fl. Brit. Ind. i. 545) refers both *M. Bombolo* and *M. æthiopica* to *M. dubia* Cav. The identity of *M. æthiopica* with *M. Bombolo* is asserted by Welwitsch in a MS. note in the *Apontamentos*, and confirmed by his tickets.

Garretia anthoteca Welw. Herb. 1314; Apont. 587, no. 49; Syn. 32, no. 80 = KHAYA ANTHOTECA C. DC. in DC. Mon. i. 721.

Hemilobium ficifolium Welw. Syn. 20, no. 50; Herb. 1128 = APODYTES DIMIDIATA E. M.

Tephrosia inebrians Welw. Apont. 573 = T. VOGELII Hook. f.; Herb. 2092.

Sesbania sericea Welw. Herb.; Apont. 585, no. 24 = S. PUBESCENS DC. There is no plant named *sericea* in Herb., but no. 1992 is evidently meant.

SESBANIA SPHAEROCARPA Welw. Herb. 1991; Apont. 590, no. 82 = *S. sphærosperma* Welw. MSS. ex Baker in Fl. Trop. Afr. ii. 135.

Erythrina suberosa Welw. Syn. 30, no. 73, non Koch = E. SUBERIFERA Welw. ex Baker in Fl. Trop. Afr. ii. 183; Herb. 2229, 2230.

Canavalia Moneta Welw. Apont. 588, no. 62; Herb. 2191–2 = C. OBTUSIFOLIA DC.

Psophocarpus Mabala Welw. Apont. 589, no. 69; Herb. 2279–80 = P. PALUSTRIS Desv. (*P. longepedunculatus* Hassk.).

Cyanospermum angolense Welw. Herb. 4065–7; Apont. 586, no. 32 = RHYNCHOSIA CALYCINA Guill. & Perr.

Muxiria utilis Welw. Apont. 573; Herb. 4094 = ERIOSEMA MUXIRIA Welw. ex Baker in Fl. Trop. Afr. ii. 229.

PTEROCARPUS TINCTORIUS Welw. Apont. 584, no. 7; Herb. 1866–72; Fl. Trop. Afr. ii. 239.

PTEROCARPUS MELIFERUS Welw. Syn. 14, no. 31; Herb. 1865; Fl. Trop. Afr. ii. 239 (*melliferus*). A note attached to the specimen explains the name: "The tree, when in bloom, is always frequented by dense swarms of bees, and the negroes fasten their hives to the lower branches."

Millettia speciosa Welw. Herb. 1843; Apont. 585, no. 23; Syn. 13, no. 29 = LONCHOCARPUS SERICEUS H. B. K.; Welw. Herb. 1839, 1840, 1841.

GIGANTHEMUM SCANDENS Welw. Apont. 585, no. 14 = *Camoensia maxima* Welw. ex Benth. in Trans. Linn. Soc. xxv. 301 (1866); Herb. 550.

Cassia psilocarpa Welw. Apont. 587, no. 40 = C. SIEBERIANA DC. Herb. 1740.

Alvesia bauhinioides Welw. Apont. 587, no. 47; Herb. 556–8 = BAUHINIA TOMENTOSA L.

Locellaria bauhinioides Welw. Apont. 588, no. 52; Herb. 546–9 = BAUHINIA RETICULATA DC. ex Oliv. in Fl. Trop. Afr. ii. 291.

AFZELIA QUANZENSIS Welw. Herb. 593–4, 628; Apont. 586, no. 35; Fl. Trop. Afr. ii. 302 (*A. cuanzensis*).

DICHROSTACHYS PLATYCARPA Welw. Apont. 576–8; Herb. 1797; Fl. Trop. Afr. ii. 333. The *D. nutans* Welw. Apont. 589, which he thought might be different from *D. nutans* Bth., is that species.

Acacia pentaptera Welw. Herb. 1810–11; Apont. 584, no. 8 = A. PENNATA Willd. var. DOLICHOSPERMA Oliv. Fl. Trop. Afr. ii. 345.

DACTYLADENIA FLORIBUNDA Welw. Apont. 572; Herb. 1289 = *Griffonia Bellayana* Oliv. in Fl. Trop. Afr. ii. 372.

MYROTHAMNUS FLABELLIFOLIUS Welw. Apont. 578; Syn. 26, no. 58; Trans. Linn. Soc. xxvii. 23; Herb. 1278–9.

NAPOLEONA ANGOLENSIS Welw. Herb. 4592; Apont. 571, 586, no. 26; Miers in Trans. Linn. Soc. 2nd S. i. 12.

Cucumis "chrysocarpa" Schum.?; Welw. Apont. 589, no. 63; Herb. 647. A mistake for *C. chrysocoma* Schum. = C. FICIFOLIUS A. Rich. δ. ECHINOPHORUS Naud. ex Cogn. in DC. Mon. Phan. iii. 494.

Sesuvium crithmoides Welw. Apont. 586, no. 33. A MS. note by Welwitsch states that the specimens of this plant were lost during the crossing of the river Bero by night; it was, he says, a prostrate variety of his *S. mesembryanthoides* (Apont. 557), which Prof. Oliver considers a form of *S. Portulacastrum*. See Fl. Trop. Afr. ii. 586.

Alvardia arborea Welw. Apont. 590, no. 92 (nomen); Syn. 10, no. 19; Herb. 2517 = PEUCEDANUM FRAXINIFOLIUM Hiern.

CORYNANTHE Welw. Apont. 568 = C. PANICULATA Welw. in Trans. Linn. Soc. xxvii. 37; Herb. 1508.

Gardenia bignoniæflora Welw. Apont. 585, no. 13 = *Amaralia bignoniæflora* Welw. ex Benth. & Hook. f. Gen. Pl. ii. 90 = SHERBOURNIA FOLIOSA Don; Welw. Herb. 2571.

Decameria Jovis tonantis Welw. Apont. 579; Syn. 10, no. 20; Herb. 2573, 2579 = GARDENIA JOVIS-TONANTIS Hiern in Fl. Trop. Afr. iii. 101.

GYNURA MINIATA Welw. Herb. 3595; Apont. 586, no. 29; Fl. Trop. Afr. iii. 403.

Sapota cerasifera Welw. Herb. 4821; Apont. 585, no. 17.

Adenopogon stellarioides Welw. Syn. 27, no. 59; Herb. 1515 = SWERTIA WELWITSCHII Engl., Hochgebirgsflora, 339.

Coldenia angolensis Welw. Herb. 5436, 5445; Apont. 591, no. 104 = C. PROCUMBENS L.; Herb. 5437–8.

Heliotropium micranthum Welw. Herb. 5425–6; Apont. 591, no. 108.

Trichodesma ambacensis Welw. Herb. 5450; Apont. 589, no. 73.

IPOMOEA GEMINIFLORA Welw. Herb. 6235; Apont. 590, no. 80; Journ. Bot. 1894, 174.

Ipomoea oleracea Welw. Herb. 6121, 6252; Apont. 589, no. 74 = I. OVALIFOLIA Chois. Journ. Bot. 1894, 86.

Ipomoea multisecta Welw. Herb. 6253; Apont. 589, no. 75 = I. COPTICA Pers. Journ. Bot. 1894, 86.

Ipomoea Mendesii Welw. Herb. 6205–8; Apont. 584, no. 12; Coll. Carp. 132 = I. TUBERCULATA Roem. & Sch. Journ. Bot. 1894, 86.

IPOMOEA PRISMATOSIPHON Welw. Herb. 6182; Coll. Carp. 161, 777, 786, 787; Apont. 585, no. 18 = *I. Buchingeri* Peters *β. tomentosa* Hallier in Engl. Bot. Jahrb. xviii. 152. See Journ. Bot. 1894, 84, 215.

Ipomoea arachnosperma Welw. Apont. 588, no. 57 = I. DICHROA Chois. ex Hallier in Engl. Bot. Jahrb. xviii. 136; Welw. Herb. 6243–4.

Evolvulus Glechoma Welw. Herb. 6149–50; Coll. Carp. 784; Apont. 589, no. 64 = IPOMOEA RENIFORMIS Chois.

Solanum saponaceum Welw. Apont. 551, 588, no. 60; Herb. 6095, non Dun. = S. ALBIFOLIUM C. H. Wright in [Kew] Bull. Misc. Inform. 1894, 127.

Solanum tinctorium Welw. Apont. 551, 590, no. 95; Syn. 29, no. 70; Herb. 6103 = S. NODIFLORUM Jacq.

STREPTOCARPUS MONOPHYLLA Welw. in Arch. Sc. Phys. xi. 202 (1861) = *S. benguelensis* Welw. ex C. B. Clarke in DC. Mon. Phan. v. pt. 1, 150 (1883).

Bignonia Ferdinandi Welw. Herb. 488; Apont. 584, no. 10 = *Ferdinandia superba* Welw. ex Seem. in Journ. Bot. 1865, 230 = *Fernandoa* Seem. *l. c.* 1866, 123 = *Ferdinandoa* Seem. *l. c.* 1870, 280 = *Ferdinanda* Welw. ex Benth. & Hook. f. Gen. Pl. ii. 1047 = *Heterophragma* sp. ex Benth. & Hook. f. *l. c.* I propose to restore Welwitsch's specific name and dedication, and to call the plant HETEROPHRAGMA FERDINANDI.

SESAMUM ANGOLENSE Welw. Herb. [1645]; Apont. 588, no. 59; Trans. Linn. Soc. xxvii. 51.

Stachytarpheta elegans Welw. Herb. [5631]; Apont. 588, no. 56 = S. MUTABILIS Vahl.

Pircunia saponacea Welw. Apont. 558 = PHYTOLACCA ABYSSINICA Hoffm. ex Welw. MS. in Apont. *l. c.*; Herb. 2438.

Diplopyramis æthiopica Welw. Apont. 591, no. 106 = CERATOGONUM SINUATUM Hochst. & Schimp.; Welw. Herb. 1756, 1758.

Aristolochia æthiopica Welw. Apont. 548. I can find no *Aristolochia* in Welw. Herb. All that is said of it *l. c.* is: "*A. Aristolochia*, que cresce a borda de ribeiras em Golungo Alto, é a unica especie d'esta familia até agora encontrada na Africa tropical. Chamei-a por esta rasão *Aristolochia æthiopica*."

Myristica angolensis Welw. Apont. 558; Syn. 51, no. 137; Herb. 781.

PROTEA MICANS Welw. Apont. 586, no. 31; Engler, Hochgebirgsflora, 197; Welw. Herb. 1589.

PROTEA ANGOLENSIS Welw. Herb. 1590; Apont. 586, no. 30; Engler, Hochgebirgsflora, 196.

Trichostachys speciosa Welw. Syn. 19, no. 46; Herb. 1622 = FAUREA SPECIOSA Welw. in Trans. Linn. Soc. xxvii. 63.

Gnidia fulgens Welw. Apont. 548; Herb. 6483.

Phyllanthus scoparius Welw. Herb. 322; Apont. 591, no. 110 = P. PENTANDRUS Müll. Arg. δ. GENUINUS Müll. Arg. in DC. Prodr. xv. 2, 337.

Maranta discolor Welw. Syn. 43, no. 118; Herb. = CLINOGYNE PURPUREA Ridl. in Journ. Bot. 1887.

MUSA VENTRICOSA Welw. Apont. 545, 578; Journ. Bot. 1887, 135; Welw. Herb. 6447.

Sanseviera angolensis Welw. Apont. 543; Herb. 3749; Coll. Carp. 140 = S. CYLINDRICA Boj. ex Baker in Journ. Linn. Soc. xiv. 548.

Tacca quanzensis Welw. Herb. 6475; Apont. 591, no. 108 = T. PINNATIFIDA Forst.

ALBUCA ANGOLENSIS Welw. Herb. 3836; Apont. 591, no. 107; Refug. Bot. t. 336.

Raphia textilis (*Metroxilon textile* Welw. olim) Welw. Apont. 584, no. 2; Syn. Expl. 39, 106; Herb. 6666, 6671; Coll. Carp. 1054 = R. WELWITSCHII Wendl. in Trans. Linn. Soc. xxiv. 439 (1864).

Hyphæne coriacea Gaertn.; Welw. Apont. 584, no. 1 = H. BENGUEL-

LENSIS Welw. Syn. Expl. 40 (1862); Wendl. in Bot. Zeit. xxxix. 91 (1881); Welw. Herb. 6662, 6670.

Pandanus (*Candelabrum* Flor. Nigr. ?) Welw. Apont. 586, no. 36 = = P. WELWITSCHII Rendle in Journ. Bot. 1894, 324, t. 347; Welw. Herb. 5770; Coll. Carp. 1015.

LEMNA ÆQUINOCTIALIS Welw. Apont. 578; Herb. 206 = *L. angolensis* Welw. ex Hegelmaier in Journ. Bot. 1865; Herb. 206.

Dichrolepis pusilla Welw. Apont. 542. A comparison of tickets with the note shows that this is the plant subsequently called *Eriocaulon juncoides* by Welwitsch in Herb. (2446).

Cyperus Ginge Welw. Apont. 542, 586, no. 37 = C. FLABELLIFORMIS Rottb. ex C. B. Clarke in Consp. Fl. Afr. v. 562; Welw. Herb. 6382, 7103; Coll. Carp. 1066.

Antrolepis anthemiflora Welw. Apont. 578 = ASCOLEPIS ANTHEMIFLORA Welw. in Trans. Linn. Soc. xxvii. 78; *Antr. leucocephala* Welw. *l. c.* = Asc. PROTEA β. BELLIDIFLORA Welw. *l. c.*; *Antr. sulphurea* and *Antr. Santolina* Welw. *l. c.* 77 = Asc. PROTEA γ. SANTOLINOIDES Welw. *l. c.*; *Antr. elata* Welw. *l. c.* = Asc. ELATA Welw. *l. c.* 79.

Andropogon stypticus Welw. Syn. 27, no. 61; Coll. Carp. 1093. This name is not taken up in Index Kewensis, Consp. Fl. Africæ, nor by Hackel in DC. Mon. Phan. vi. The name does not occur in Welwitsch's herbarium, but a correlation of the notes on his 7526 with those in Syn. leaves no doubt as to the identity of the number.

Eleusine textilis Welw. in Murray's Journal of Travel, i. 31 (1858) = E. INDICA Gaertn. Var. ex Welw. Apont. 541, and Herb. 2988.

ELEUSINE LUCO Welw. Herb. [2702, 2768, 2949]; Apont. 591, no. 100 = E. CORACANA var. ex Welw. in Murr. Journ. Trav. i. 30.

CYATHEA ÆTHIOPICA Welw. Apont. 538, 587, no. 42 = *C. angolensis* Welw. in Hook. Syn. Fil. 22, and in Herb. 83, 186.

Marattia æthiopica Welw. Apont. 539 = M. FRAXINEA Sm.; Welw. Herb. 84.

Azolla æthiopica Welw. Apont. 539; Herb. 37 = A. PINNATA Br.

PODAXON LOANDENSE Welw. Apont. 535; Welw. & Curr. in Trans. Linn. Soc. xxvi. 288, t. xx. (*loandensis*); Herb. 115.

The recent revival of interest in Tropical African plants has resulted in the nearly simultaneous description of new species founded on Welwitsch's numbers, some instances of which I have given in this Journal for 1894, pp. 84–86. The Welwitsch plants described by Mr. Rolfe in the *Boletim de Sociedade Broteriana* are most of them given elsewhere, but it is not easy to decide which name takes priority. In one case Mr. Rolfe's must certainly go: *Diplorhinchus* [*Diplorhynchus*] *Welwitschii* Rolfe (*l. c.* xi. 85), Welw. Herb. 5968, is preceded by *D. angolensis* Büttner in Verhandl. Brandenb. xxxi. 85 (1890), founded on the same number. *Ochna Welwitschii* Rolfe (*l. c.* 84) (Welw. Herb. nos. 4594, 4597) does not appear to me to differ, so far at any rate as the latter number goes, from the type-specimen of *O. Afzelii* Br. in Herb. Mus. Brit., nor from Prof. Oliver's description of that plant (in Fl. Trop. Afr. i. 319).

In my notes on the dating of periodicals (Journ. Bot. 1894, 180) I omitted to call attention to the *Boletim* as perhaps the most troublesome to assign to any definite date. The fascicles consist of sheets loose in a wrapper, and the wrapper itself is dated in so vague a manner as to be useless. For example, Mr. Rolfe's species in question appear in "fasc. 2–3" of vol. xi. The printed wrapper is dated at the bottom "1892"; in the middle of the page this is altered in ink to 1893; and the part was received at the Museum on August 4th, 1894. The editor, Dr. Henriques, courteously informs us that "il est presque impossible de vous indiquer l'époque exacte de la publication de chaque fascicule." I do not envy the Jackson of the future his task in ascertaining the dates of publication of the new species in this serial: in this case even the preservation of the wrappers is of little use, and there is no information to be gleaned from the title-page to the volume.

It is therefore hardly possible to determine the position of Mr. Rolfe's other names. The *Orthosiphon*, if a distinct species, will stand; but in the other cases I must content myself with pointing out the synonymy.

Orthosiphon Welwitschii Rolfe, *l. c.* 88 = *O. adornatus* Briq. var. *angolensis* Briq. in Engl. Bot. Jahrb. xix. 176 (21 Aug. 1894): both founded on Welw. Herb. 5519, 5520.

Vitex flavescens Rolfe, *l. c.* 87 = *V. Mechowii* Gürke in Engl. Bot. Jahrb. xviii. 167 (22 Dec. 1893): both founded on Welw. Herb. 5731.

Clerodendron triplinerve Rolfe, *l. c.* 87 = *C. formicarum* Gürke, *l. c.* 179: both founded on Welw. Herb. 5622, 5661.

ON THE RUBI LIST IN 'LONDON CATALOGUE,' Ed. 9.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 49.)

R. gratus Focke. No. in Set, 10. 19 v.-c. (2, 3, 5, 6, 15–17, 27, 34, 36, 38–41, 44, 48, 53, 57, 110). Very widely spread, and to be found, no doubt, in many other counties. As var. of *R. villicaulis* Koehl. in *Lond. Cat.* ed. 8; but see Dr. Focke's remarks in *Journ. Bot.* 1877, 367.

R. leucandrus Focke. No. in Set, 11. *Journ. Bot.* 1890, 129. 7 v.-c. (2, 3, 5, 9, 11. 34, 36). I no longer think it possible to keep apart from this species the E. Cornwall and S. Devon plant which for some years past we have been calling *R. hirtifolius* Muell. & Wirtg., and which is described under that name in *Journ. Bot.* 1892, 144. The true *R. hirtifolius* is considerably nearer to *R. pyramidalis*, next in order before which it will be found placed below, where its distinctive characters are briefly described.

R. ramosus Briggs, *Journ. Bot.* 1871, 330–332. No. in Set, 59. 3 v.-c. (1, 2, 3). Locally abundant, but not yet found north of Dartmoor.

R. ARGENTATUS P. J. Muell. No. in Set, 30. 13 v.-c. (4–6, 8–10, 17, 34–38, 58). Probably very widely spread, but usually with more elliptic and longer-pointed leaflets than in the Herefordshire specimens representing it in the "Set."

Var. b. *robustus* (P. J. Muell.). 9 v.-c. (4–17, 23, 49). Pointed out to me in three counties last summer by Dr. Focke. A very strong handsome plant going off from *R. argentatus* towards *R. pubescens*, with crowded long prickles nearly straight on the stem, but more or less falcate on the panicle-rachis, thick incised and irregularly cut leaves (very white-felted beneath), and a long showy-flowered panicle. Here, I think, will probably come some of the plants formerly named *R. macroacanthus* Blox.; but I do not feel that I can yet separate *R. robustus* with certainty from its allies. Genevier (*Ess. Mon.* p. 214) describes the stem as "glabre ou glabrescente," referring perhaps to its state late in the season, as in my specimens, gathered early, the stem is pretty thickly clothed with short crisp hairs.

R. RUSTICANUS Merc. No. in Set, 32. 62 v.-c. (1–18, 21–24, 26–30, 32–46, 48–52, 54, 55, 57, 58, 62–65, 67, 69, 71, 75, 91, 100, 110). I. Perhaps really absent from some of the Scottish counties, though hardly from any of the English. I omit varieties as too uncertain and ill-defined.

R. PUBESCENS Weihe (sp. collect.). 17 v.-c. (2, 4, 6–9, 16, 17, 21–24, 27, 36, 38, 49, 57). I. The name is here applied in an aggregate sense only, and *exclusive of the following plant.*

Var. b. *subinermis* Rogers, *Journ. Bot.* 1894, 45. 8 v.-c. (9, 11–13, 17, 22, 34, 36). Dr. Focke saw this growing in Berks and Surrey last summer, and considered it distinct from any form known to him on the Continent. It is the plant described as "*R. pubescens* Weihe ?" in *Journ. Bot.* 1892, 203, differing greatly from the type in its much narrower leaflets and nearly unarmed panicle; while further, when growing in shade or in dense thickets (as it often does), the 5-nate leaves frequently give place to 3-nate or 4-nate-pedate ones. In several particulars it recalls *R. ramosus*, especially in the ashy felt on panicle-rachis and the under surface of the leaves, and in the weak armature; but it differs greatly in the hairy stem, the narrow cylindrical panicle, and the elliptic-acuminate leaflets with long points.

R. THYRSOIDEUS Wimm. (sp. collect.); *Journ. Bot.* 1893, 45; 1894, 45. 13 v.-c. (3, 10, 14, 17, 32, 35, 36, 49, 53, 55–58). [92]. Perhaps doubtful in two or three other of the vice-counties named, besides S. Aberdeen (92); but, I believe, certainly the true plant in most of them.

R. SILVATICUS W. & N. 13 v.-c. (2–5, 8, 9, 17, 20, 22, 35, 36, 40, 49). I. Apparently thinly but widely spread.

R. MACROPHYLLUS (sp. collect.). 62 v.-c. (2–11, 13–18, 20–28, 32–42, 45, 46, 48, 49, 52, 55–59, 62, 63, 65, 68, 69, 72, 81, 84, 86, 88, 92, 95, 96, 98, 100, 106). I. Inclusive of the following "varieties."

a. *R. macrophyllus* W. & N. 52 v.-c. (All as in sp. collect., *except* the following ten;—32, 33, 39, 52, 56, 63, 84, 98, 100, 106). I.

Var. b. *Schlechtendalii* (Weihe). 31 v.-c. (2–6, 10, 13, 17, 20, 22, 23, 25, 27, 35–38, 40, 42, 46, 48, 49, 52, 55–57, 62, 84, 96, 93, 106). I.

Var. c. *macrophylloides* (Genev.) ? *Journ. Bot.* 1892, 205; Genev. *Ess. Mon.* p. 172. 3 v.-c. (34, 35, 40). The W. Glost. (Hudnall's, *Shoolbred*) and Salop (Pulverbach, *Benson*) plants are very like each other, and apparently very near my Tintern (Monm.) specimens. Dr. Focke now tells me that he considers Genevier's plant "a mere form of *R. Schlechtendalii*"; but I hardly think that he would say this of ours, which may perhaps want another name.

Var. d. *amplificatus* (Lees). No. in Set, 33. 18 v.-c. (5, 18, 22, 25, 27, 32, 33, 35–39, 55, 57, 62, 63, 72, 100). I. I have seen specimens from very few of the vice-counties, and am far from being satisfied that I yet *know* Lees's plant.

The var. *glabratus* Bab. has been transferred to *R. nemoralis* P. J. Muell. (see above); and var. *devoniensis* Focke MS. is omitted, as Dr. Focke now associates it with a Carnarvonshire plant not yet published. *R. myricæ* Focke and its var. *virescens* are also omitted, because Dr. Focke, now that he has seen the Monmouthshire plants growing, is no longer fully satisfied with his former naming of them.

R. MOLLISSIMUS Rogers, *Journ. Bot.* 1894, 45. 4 v.-c. (4, 9, 17, 108). I. [3]. Last August I showed the living plant in Surrey to Dr. Focke, and he thought it unknown on the Continent.

R. SALTERI Bab. No. in Set, 35. 3 v.-c. (10, 36, 55). Our difficulties here are still considerable. So far as I know, Prof. Babington has never definitely accepted as "the typical *R. Salteri* Bab." any plant except that from Apse Castle Wood, I. of Wight (see *Brit. Rubi*, p. 132). But it would seem from the *B. E. C. Repts.* 1887 (p. 173) and 1888 (p. 207) that he acquiesced in Dr. Focke's suggestion of the name for Mr. Ley's Aconbury (Heref.) plant (No. 35 in the Set), which I saw growing in great quantity last Sept. Just before that, I had seen in the herb. in Shrewsbury Museum Bloxam's specimen from "near Kirkby, Leic.," and had thought it rightly named. But I am far from being able to say that the plants from these three counties are certainly identical; and I know of no other counties in which the species has been found. The *R. calvatus* Blox., formerly placed here, and now transferred to *R. villicaulis* as a var., does seem to occupy a somewhat intermediate position between the two species.

R. QUESTIERII Lefvr. & Muell. No. 6 in Set ("*R. erythrinus*," but such specimens only as are labelled from "Bailie Gate, Dorset"). 3 v.-c. (3, 5, 9). [4].

R. COLEMANNI Blox. in Kirby, *Fl. Leic.* p. 38. No. in Set, 12. 4 v.-c. (11, 17, 55, 58). [3. I.]. Discovered in a second Surrey locality, Cutt Mill, Puttenham, by Rev. E. S. Marshall and Dr. Focke last August. Mr. Bagnall has stated in his *Fl. Warw.* (p. 76) that the two Warwickshire stations are now destroyed. The Thirsk plant (*Journ. Bot.* 1886, 221) may, I suppose, be certainly accepted as *R. Boræanus* Genev., and so *not R. Colemanni*.

R. Sprengelii Weihe (including the "b. *Borreri* Bell-Salt." of *Lond. Cat.* ed. 8). No. in Set, 36. 36 v.-c. (2–5, 8–12, 16–18, 20, 24, 27, 34–39, 48, 49, 55, 57–59, 62–64, 69, 73, 74).

R. micans Gren. & Godr. "*R. villicaulis*, b. *adscitus* Genev.," *Lond. Cat.* ed. 8. No. in Set, 13. 23 v.-c. (1–6, 8–11, 17, 22, 35, 36, 38–40, 49, 52, 57, 58, 88, 107). I. Not equally well-marked in all the counties named. The Derbyshire plant (Shirley) may even prove to be something different.

R. hirtifolius Muell. & Wirtg. 10 v.-c. (9, 15, 27, 34, 36, 40, 47, 49, 86, 98). I. Very nearly allied to *R. pyramidalis*, and perhaps only a subspecies or var. of it, but differing constantly in the much laxer panicle and the ascending fruiting sepals. The leaves also are usually not nearly so softly hairy and velvety to the touch beneath; nor have they the very compound toothing (with the larger teeth patent or recurved) so frequent in *R. pyramidalis*. The number of stalked glands is variable in both plants, but usually abundant in our *hirtifolius*, which also has the leaflets more rounded, with long acuminate point, so characteristic of my foreign specimens of *R. danicus*, which Dr. Focke now combines with *R. hirtifolius*.

R. pyramidalis Kalt. *R. vulgaris β. umbrosus* W. & N., *R. G.* pp. 38, 39, t. 14. No. in Set, 37. 34 v.-c. (3–9, 11, 12, 14, 16–18, 22, 23, 27, 34–36, 38–40, 42–44, 48, 49, 55, 57, 58, 63, 96, 97, 105). I. [103]. Most of the British "*R. villicaulis*" of former times belonged to this species. The form described in *Journ. Bot.* 1892, 223, as var. *eifeliensis* Wirtg. is omitted as being only a *poor-ground state* of the type.

R. leucostachys Schleich. 65 v.-c. (1–25, 27, 30–50, 52–57, 59, 62–65, 67–71, 81, 107). I. Very variable, but seldom hard to recognise.

Var. b. *gymnostachys* (Genev.). *R. macrothyrsos* Lange. No. in Set, 14. 5 v.-c. (5, 9, 36, 44, 49). I follow Dr. Focke in considering these two names synonymous, and making them cover the slender nearly eglandular Herefordshire form represented in "the Set" by No. 14, as well as the stronger form of the other four counties, which is the "var. *macrothyrsus* N. E. Br." of *Engl. Bot.* ed. 3, Suppl.

Var. c. *angustifolius* Rogers, *Journ. Bot.* 1892, 234. 13 v.-c. (4, 6–9, 11, 17, 22, 23, 34–36, 48). Probably of hybrid *origin* (*R. leucostachys* × *rusticanus*), but now so widely spread, and locally so abundant as an independent plant, as to seem to claim a place in our list. Many years ago pointed out to me by Mr. Briggs as a remarkable "narrow-leaved *leucostachys*."

The var. "*conspicuus* (P. J. Müll.)" of *Lond. Cat.* ed. 8, is omitted because Dr. Focke considers Mueller's plant to be a hybrid, *R. bifrons* × *leucostachys*, and *R. bifrons* has not yet been found in Britain.

R. lasioclados Focke, *Journ. Bot.* 1894, 45; *Syn. R. G.* 198, 199. 4 v.-c. (15, 35, 36, 42). Apparently a frequent form in Herefordshire and neighbouring counties; but I do not yet know how to distinguish it certainly from *leucostachys* hybrids.

R. Boraeanus Genev. *Ess. Mon.* pp. 154–156; *Journ. Bot.* 1892, 267. No. in Set, 61. 4 v.-c. (3, 27, 28, 62). This plant and the next, though not yet widely found in Britain, are locally abundant.

R. curvidens A. Ley, *Journ. Bot.* 1894, 143. 2 v.-c. (36, 44).

R. mucronatus Blox. 52 v.-c. (1–6, 8–11, 16, 17, 20, 22, 27, 32, 34, 36, 38–40, 43, 46, 47, 49, 54, 55, 57, 58, 62–64, 67, 69, 70, 81, 84–86, 88, 91, 92, 96–98, 100, 102, 103, 105–107, 110). I. A local plant in my experience, though so remarkably widespread.

The *R. Banningii* Focke, described and placed provisionally as a var. of *R. mucronatus* in *Journ. Bot.* 1892, 268, *R. erubescens* Wirtg., and *R. melanoxylon* M. & W. are omitted as not being certainly British.

R. Gelertii Frider. *Journ. Bot.* 1894, 108 (for this and var.). 2 v.-c. (25, 27).

Var. *criniger* Linton. 7 v.-c. (22, 27, 28, 36, 39, 57, 58). I.

R. anglosaxonicus Gelert, *Journ. Bot.* 1890, 166; 1892, 269. No. in Set, 16. 15 v.-c. (2–6, 8, 9, 11, 16, 22, 36, 38, 49, 56, 57). I. [23, 27].

Var. *raduloides* Rogers, *Journ. Bot.* 1892, 269 (for this and the next var.). No. in Set, 62. 10 v.-c. (6, 9, 16, 17, 34–36, 40, 42, 43). [57, 58].

Var. *setulosus* Rogers. *R. infestus* Bab. (in part). 5 v.-c. (4, 5, 34–36). [23]. Extreme examples of this var. are so very Koehlerian in character, that nothing but the fact of their seeming to be connected with *R. anglosaxonicus* by a series of intermediate forms can, I think, justify its continuance in this place.

R. infestus Weihe, *R. G.* p. 77, t. 30. 10 v.-c. (5, 6, 17, 22, 38, 49, 59, 65, 86, 97). I. [40, 58, 70, 72]. In some cases I believe this name was rightly applied by Bloxam, as no doubt by Prof. Babington also.

R. uncinatus P. J. Muell. *Journ. Bot.* 1894, 47. 3 v.-c. (34, 35, 38). Mr. Bagnall's Hill Hook plant, on account of which I have credited Warwickshire (38) with this species, *may* prove different; but I think it a small form of *uncinatus*, which Dr. Focke now thinks best placed in this group of "transition forms."

R. Borreri Bell-Salt. *Journ. Bot.* 1892, 270. No. in Set, 38. 9 v.-c. (3–6, 8–10, 34, 35). I.

Var. *dentatifolius* Briggs, *Journ. Bot.* 1894, 46. No. in Set, 63. 3 v.-c. (3, 4, 9).

Var. *virgultorum* A. Ley, *Journ. Bot.* 1894, 143. 3 v.-c. (36, 37, 40).

R. Leyanus Rogers, n. sp. No. in Set, 64 ("*R. Drejeri*"). 15 v.-c. (1–5, 8, 24, 36, 38, 39, 41, 42, 44, 49, 57). I. First described, I believe, by me, in *Journ. Bot.* 1892, 271, under the name "*R. Drejeri* G. Jensen," suggested by Dr. Focke. It had been previously referred to in *B. E. C. Rep.* 1886, 149, and in *Fl. Heref.* 520, as *R. Purchasii* Blox. From the latter plant, which Mr. Purchas now considers indistinguishable from *R. mucronatus* Blox., it is certainly distinct; and a good series of specimens of Jensen's *Drejeri*, for which I am indebted to Messrs. Gelert and Friderichsen, have shown me conclusively that it cannot bear that name. Under these circumstances, it is with great pleasure that I find myself free to name it after its discoverer, the Rev. Augustin

Ley. A widely spread and easily recognized bramble, as yet apparently not found out of the British Isles.

R. RADULA (sp. collect.). 63 v.-c. (2–14, 16, 17, 20–27, 29–32, 35–40, 43, 45, 49, 52, 55–58, 61–65, 67, 69, 70, 72–74, 79, 83, 85, 86, 88, 89, 91, 103, 105, 106, 110). I.

a. *R. radula* Weihe. *R. melanoxylon* Blox. *Journ. Bot.* 1894, 46, 47 (for this and the two next vars.). 18 v.-c. (5, 22–24, 27, 30, 38, 39, 57, 58, 61, 65, 69, 85, 86, 103, 106, 110).

Var. b, *anglicanus* Rogers. No. in Set, 39 ("*R. radula* Weihe"). 10 v.-c. (2–5, 8, 9, 11, 36, 38, 40).

Var. c. *echinatoides* Rogers. No. in Set, 65. 16 v.-c. (16, 17, 20, 21, 23, 27, 35, 36, 38, 49, 52, 57, 62, 64, 65, 67). I. [6, 22, 39].

Var. d. *sertiflorus* (P. J. Muell.) ? *Journ. Bot.* 1892, 300. 4 v.-c. (9, 20, 35, 36). Dr. Focke is not yet satisfied that this plant is either correctly named or correctly placed.

R. PODOPHYLLUS P. J. Muell. *Journ. Bot.* 1887, 23; 1892, 233; *Bot. Rec. Club Rep.* 1884–6, 121. 9 v.-c. (3, 16, 39, 48, 50, 57, 58, 63, 65). [59]. This name covers a considerable range of variation. Hence the difficulty of fixing the group to which the species belongs. This place, among the *Radulæ* (now preferred for it by Dr. Focke), best suits the stronger forms found in the North of England.

R. ECHINATUS Lindl. No. in Set, 40. 48 v.-c. (2–12, 16–18, 20–25, 27, 32–38, 40, 41, 43, 46, 47, 49, 50, 55–58, 62–64, 67, 69, 76, 81, 86, 95). I.

R. OIGOCLADOS Muell. & Lefvr.; *R. fusco-ater* Auct. Brit. (in part). "*R. apiculatus* Bor. *Fl.* t. ii. 196 (W. & N. ?)"; Genev. *Ess. Mon.* p. 135; *Journ. Bot.* 1893, 7. 8 v.-c. (3–5, 23, 27, 36, 38, 53). [34]. Near to *R. mucronatus*, as this obviously is, its closest alliance seems to be with the two plants which I here place after it as vars., in what I think most of us will regard as their natural position, near *R. radula* and *R. echinatus*, but distinct from both.

Var. b. *Newbouldii* (Bab.), *Journ. Bot.* 1887, 20; 1892, 300. No. in Set, 66. 7 v.-c. (25 or 26, 27, 36, 40, 58, 63, 85). I.

Var. c. *Bloxamianus* (Colem.), *Journ. Bot.* 1892, 300. 5 v.-c. (4, 5, 38, 55, 57).

(To be continued.)

ADDITIONAL NOTES ON MR. W. R. ELLIOTT'S HEPATICÆ.

By Antony Gepp, M.A., F.L.S.

Our eminent hepaticologist, Dr. Richard Spruce, at the time of his death was engaged in the preparation of a paper on the Hepatics collected in the islands of St. Vincent and Dominica by Mr. W. R. Elliott on behalf of the West India Committee. That paper, under the title "Hepaticæ Elliottianæ," has recently been published in the *Journ. Linn. Soc.* (*Botany*), xxx. 331–372, tt. 20–30. Two of the species given in Dr. Spruce's list have, so far as I know, never been described. The following notes were drawn up with a view to supplying the deficiency; they were, however, sent in too late for insertion in the paper.

Lejeunea atheatostipa Spruce (*loc. cit.* p. 348) belongs to Dr. Spruce's subgenus *Microlejeunea*, and was originally "picked out of Wright's Cuban hepatics some years ago." It also occurs very sparsely under Mr. Elliott's No. 212, St. Vincent, in company with two other species of *Microlejeunea* and some ten other hepatics and mosses. At one time I despaired of the possibility of isolating the plant; but, thanks to the kindness of Mr. M. B. Slater, of Malton, the present possessor of the Spruce Herbarium, who lent me the specimen which Dr. Spruce had set aside for himself, and to whom I am greatly indebted for the loan of several other specimens, I was able, after diligent search, to identify the plant and separate a few fertile plants. It is upon these I have based the following description, as I have not seen Wright's Cuban plant. I may add that I have made a drawing, with the help of the camera lucida, and have placed it in the British Museum Herbarium.

LEJEUNEA ATHEATOSTIPA Spruce. *Monoica*, viridis, caule subpinnatim ramoso. *Folia* subimbricata, angulo 60° patentia, in situ obovato-rotundata, convexo-complicata (vel dissita erecta lobo vix lobulum superante), cellulis chlorophylloso-cinctis, lobulo duplo breviore turgido. *Foliola* 4-plo minora (caule latiora) rotunda, ad ½ bifida, segmentis acutis. *Bracteæ* foliis ¼ longiores, lobo subacuto, lobulo sat breviore angusto (4 cell. lat.) obtuso. *Bracteola* ovalis, vix ad ½ bifida. *Perianthia* subemersa obovata alte 5-carinata. *Andrœcia* 3-juga.—*Folia* ·245 × ·17, *lobulus* ·12, *cellulæ* ·0126–·0117; *foliola* ·05; *bracteæ* ·3, *bracteola* ·2 × 1; *perianthia* ·53 × ·32 mm.

Hab. St. Vincent, Richmond Valley, super *Radulam* repens (*Elliott*, No. 212, Jan. 1892).

The other species which needs a description is *Metzgeria planiuscula* Spruce (*loc. cit.* p. 368). The name in the first instance appeared in the *Revue Bryologique*, 1888, pp. 34, 35, and was applied by Dr. Spruce to the plants Glaziou No. 7394 (Brazil) and Balansa No. 4334 (Paraguay), but without any description. Happily there is among Dr. Spruce's MSS. a description of Balansa's plant, which runs as follows:—

METZGERIA PLANIUSCULA Spruce. "M. conjugatæ subsimilis, iteratim dichotoma, linearis; costa tenui (diametro 5 cell.) subtereti; limbo latiusculo plano vel subconcavo, solum in sicco margine reflexulo; radicellis nisi subter costam paucis, marginalibus (ubi rarius adsint) solitariis inæquilongis."

Hab. Paraguay (Balansa, No. 4334).

In Dr. Spruce's paper I took the liberty of adding a note calling attention to certain features in which the three plants differ from one another; and before I saw the above description I was inclined to refer Glaziou's and Balansa's plants to *M. dichotoma* Nees, as emended by Lindberg in his *Monographia Metzgeriæ* in *Faun. Flor. Fenn. Acta*, 1875–7, p. 20, and to regard Mr. Elliott's plant as a possible variety of the same species. Mr. Elliott's plant is fertile, having long pyriform calyptras (1·5 mm. long × 0·75 mm. wide), setulose above. The angle of dichotomy of the fronds is about 75°. It differs from Lindberg's Brazilian specimen in having wider and flatter fronds with margins less widely recurved, with pagina glabrous or very remotely setulose, and paginal cells about twice as wide, and marginal root-hairs sometimes solitary, sometimes in pairs. Lindberg's specimen was collected at Caldas, in Minas Geraes, by G. A. Lindberg, and to my mind is identical with Glaziou No. 7394; but whether these plants absolutely correspond with the original specimen of *M. dichotoma* collected in Jamaica by Swartz, I have no means of ascertaining.

SHORT NOTES.

A NEW FORM OF PYRUS. — In 1893 I found a *Pyrus* in Breconshire, which appeared to me to be the well-known *P. scandica* Syme, of Glen Catacol, Arran, and which I distributed through the Botanical Exchange Club under that name. Last year I had good opportunities of observing its flower and ripe fruit; and having, through the courtesy of the authorities at Kew, compared it with plants in that collection, I think it well to call attention to it by a short note in this Journal, leaving to a future opportunity to publish a fuller description, with, it is hoped, a drawing.

Pyrus minima, n. sp. or n. var. A small spreading shrub, much branched, with slender branches. Leaves linear-oblong, shallowly pinnatifid, with 3–4 principal lobes, bright green above, ashy-felted beneath. Flowers open early in June, freely produced, in loose corymbs, small, in size resembling those of *P. Aucuparia* Gaertn.; petals cream-coloured, unopened anthers cream-coloured; calyx erect and prominent upon the unripe fruit, and persistent till the fruit falls. Fruit *small*, globose, bright coral-red, ripening in the end of August, bitter. Very near the *P. scandica* Syme, of Arran, and perhaps a variety of that plant, from which the leaf-differences would scarcely separate it; but the small flowers, the very slender branching habit, and especially the small globose bright red fruit, seem to indicate specific distinction. Loc.:—On a limestone mountain cliff called Craig Cille, near Crickhowell, Breconshire; also on limestone rocks at Blaen Onnen, two miles westward from Craig Cille. Undoubtedly native, and in great abundance at the former station, where the shrubs clothe the limestone cliff to its head at an altitude of about 2000 ft.; seedlings also being frequent. *P. Aucuparia* Gaertn., *P. intermedia* Ehrh., and *P. Aria* Sm. var. *rupicola* also occur on the same cliff; but the very distinct habit and fruit of the present plant, as well as other reasons, forbid the idea that it can be due to hybridity. The anthers in *P. intermedia* seem uniformly to be pink; those of *P. Aria* and its varieties usually cream-coloured. What is the colour of the anthers in *P. scandica?*—AUGUSTIN LEY.

GLYCERIA DISTANS var. PSEUDO-PROCUMBENS, n. var. — Panicle smaller, more rigid, oblong, not pyramidal, subunilateral; branches shorter, stiffer, the lowest only one-fourth the length of the whole panicle, all ascending; spikelets rising from nearer the origin of the branches, much narrower, and more acute; florets more closely imbricated than in the type. This variety has much the aspect of *Festuca procumbens*, from its rigid subunilateral panicle, with acute spikelets; but the latter are distinctly pedicellate, and the pales are faintly ribbed; the panicle also is laxer. The superficial resemblance to that species is so strong that I am much disposed to think the above is a hybrid of it, this supposition being supported by the apparent absence of fruit. Prof. Hackel doubts the hybrid origin, though he cannot come to any definite decision without fruiting panicles, which I failed to obtain; so, in deference to his opinion, I have described it as a variety. Should, however, its hybridity be confirmed, the varietal name should be dropped. I suggest the plant being a hybrid partly from its intermediate characters and appearance, and partly from the apparent absence of fruit; though most of the other Glycerias growing with it were past flowering, and I found abundant fruit on them. Much of the plant which I am now describing was quite dead, and, as I thought, past flowering; but no fruit was forthcoming. I committed an error, however, in not drying any of the panicles in this condition, and fear that personally I shall not be able to remove the doubt for the present, as I am leaving Woolwich in the spring. I hope that any botanist who may be in the neighbourhood in the early autumn will set this point at rest. I found the variety abundantly by the edge of the towing-path of the canal between Higham, near Gravesend, and the bridge where the Port Victoria railway crosses it; also (more sparingly) by two or three ditches in Plumstead Marshes, always with *G. distans* and *F. procumbens.* I have sent specimens for distribution to the Botanical Exchange Club. My thanks are due to Prof. Hackel for valuable suggestions as to the above description and notes.—A. H. Wolley Dod.

Kent Records.—The undermentioned plants observed by me in 1894 do not appear in *Topographical Botany* for vice-county 16, West Kent; but Mr. Marshall has notes, either of his own observation or of that of others, for all except plants marked with an asterisk:—**Stellaria umbrosa* Opiz. Plentiful at Darenth.—*Sagina apetala* L. Darenth. — *Prunus insititia* L. Plumstead Marshes.— **Rubus carpinifolius* W. & N. Chislehurst Common, plentiful.— **R. villicaulis* Koehl. var. *Selmeri* (Lindeb.). Dartford Heath.—**R. gratus* Focke. Plumstead Common.—**R. pyramidalis* Kalt. East Wickham.—**R. podophyllus* P. J. M. Plumstead Common.—**R. mucronatus* Blox. (a glandular and hairy form). Near Eltham.— **R. anglosaxonicus* var. *raduloides* Rogers. Dartford Heath. — **R. Radula* var. *echinatoides* Rogers. Shooter's Hill. — **R. fuscus* var. *nutans* Rogers. Bostall Heath. — **R. pallidus* W. & N. East Wickham. — **R. ericetorum* Lefvr. (*R. Lejeunei* W. & N.?). Near Eltham. — **R. rosaceus* var. *infecundus* Rogers. Shooter's Hill.— *Hippuris vulgaris* L. Northfleet.—*Arctium majus* Sch. Higham.— *Vaccinium Myrtillus* L. Ightham Common. — **Teucrium Botrys* L. A small but dense patch on the slopes over Upper Halling, but growing in rough ground; one might easily pass within a few yards of it, as I must have done two or three times, without noticing it. This is by far the most interesting addition to the county flora

I have yet made. I have little doubt it is native. — **Polygonum dumetorum* L. Near Plumstead. — *Salix purpurea* L. Fairly common about Darenth.—**Acorus Calamus* L. Pond in Baldwyn's Park, perhaps planted. — **Carex axillaris* Good. Near Blendon Park.—**C. disticha* Huds. Northfleet; Darenth.—*C. divulsa* Good. Eltham and several other localities. — *C. distans* L. Northfleet (inland). — *Kœleria cristata* Pers. Dartford Heath, plentiful. — —*Bromus racemosus* L. Darenth Meadows. The following are unrecorded for 15, East Kent:—*Salix viminalis* L. Below Faversham. — **Scirpus triqueter* L. By the Medway between Forstall and Aylesford, in quantity sufficient to make it surprising that it has been overlooked by previous botanists. My thanks are due to Mr. Marshall, Mr. Rogers, and Prof. Hackel for assistance in determination of several of the above plants. All the *Rubi* are vouched for by Mr. Rogers, who kindly told me they were new to the vice-county.—A. H. Wolley Dod.

Rubus Rogersii Linton in Scotland. — I have recently recognised this species among some brambles gathered in Mid-Perth (88) by Mr. Charles Bailey, about Knock of Crieff, during last summer; and also in a gathering by the Rev. E. S. Marshall (No. 158), from shingles of the Carron, near Bonar Bridge, E. Ross (106), which was sent out by him as "*Rubus ammobius* Focke?" This extends a newly described bramble to Scotland, and adds two Scotch counties to the five English and one Irish for which it is known. — Edward F. Linton.

Juncus tenuis Willd. — In his list showing the distribution of this plant (p. 39), Mr. Bennett apparently overlooks Co. Cork, where it has been recorded by Mr. R. A. Phillips (*Irish Naturalist*, October, 1894, p. 205) as growing in woods at Mill Cove and Dunbry, and "in abundance near Adrigole . . . . principally on damp roadsides, and bare spots by the sides of streams, not in the turf, and associated with such plants as *Cicendia filiformis*, *Anthemis nobilis*, *Eufragia viscosa*, *Scutellaria minor*, *Juncus bufonius*, and *J. lamprocarpus*."—R. Lloyd Praeger.

Hieracium diaphanum Fr. var. cacuminum, n. var.—Stem from 6 to 18 in. high, scarcely branched, the mountain form bearing from 1 to 4 flowers (the Hepste Glen plant 2–7) and 3–4 leaves; the lower part with shaggy white hair, which extends to the petioles of the lower leaves, and in small specimens to the peduncle. Primary leaves roundly elliptic; lower oval, on rather long petioles; upper lingulate, sessile, very long and large in proportion to the height of the stem; thin, dull green, nearly naked on both surfaces; entire, or more commonly with 2–4 shallow irregular teeth. Peduncles usually with 1–3 short loose bracts which bear stiff hairs, with some floccose down and many minute yellow glands. Buds oblong; phyllaries broad-based, obtuse, outer dark green, with lighter margins, inner longer, light green; slightly hairy and glandular. Tip of ligules destitute of ciliæ; styles pure yellow. Gregarious, growing on turfy ledges of mountain rocks, a larger proportion than usual of the stems being flowerless. In cultivation the plant attains 2 ft., the stems branch, the lower leaves are broader, and more deeply toothed. A wild plant found on river-side rocks in the Hepste Glen, South Breconshire, bears all the features of the cultivated plant: and garden specimens raised from seed of this river-side plant were indistinguishable from those raised in the same soil and conditions from the plant of the mountain cliffs. Loc.: Mountain cliffs at from 2000 to 2500 ft., in the Brecon Beacon range; first gathered in 1886. Central cliff of the Beacons; Y-fan-big; Craig-y-gledsian—all on the old red sandstone. Flowering in August. I wish to acknowledge much kind help from Mr. F. J. Hanbury, F.L.S., in drawing up the above description.—AUGUSTIN LEY.

NOTICES OF BOOKS.

Conspectus Floræ Africæ . . . par TH. DURAND & HANS SCHINZ. Vol. V. Monocotyledoneæ & Gymnospermeæ. Bruxelles: 1895. 8vo, pp. 977.

THE large number of systematic botanists who are at the present time working at African plants will hail with delight this instalment of a work which, when completed, will materially lessen their labours, and greatly diminish the difficulties of the botanists who live to take part in the completion of the two African floras of which fragments have been given to the world. In this *Conspectus* we have brought together, by men admirably qualified for the task, a singularly complete list of the species known to inhabit Africa, with references to the places where they have been described, and other literature concerning them; a considerable amount of synonymy; an indication of distribution; and, in many instances, citations of collectors and their numbers. Even the dates of publication—the omission of which is the one great defect of the *Index Kewensis*—are here given; and we shall thus have, within the compass of five handy volumes, a compendium of the history of African plants brought up to the time of publication. When it is remembered that the *Flora Capensis* stopped (at *Campanulaceæ*) in 1865, and the *Flora of Tropical Africa* (at *Ebenaceæ*) in 1877, and that ever since these dates the publication of Cape and Tropical African species has proceeded steadily and rapidly both at home and abroad, we can form some notion of the amount of material which Messrs. Durand and Schinz have had to incorporate in their *Conspectus*, and of the boon which they have conferred upon their fellow-botanists.

Mr. Rendle (*Journ. Bot.* 1893, 346) refers to "a tradition which the younger botanists have received from their fathers of a continuation of the *Flora Capensis*": and this is hardly an exaggerated way of putting it. For it is nearly twenty-three years ago since the following paragraph appeared in these pages:—"The Parliament of the Cape of Good Hope has voted a grant of money towards the publication of the continuation of the *Flora Capensis*. Professor

Thiselton Dyer has undertaken the general editing of the volumes, and several English botanists have promised to contribute the descriptions of different natural orders" (*Journ. Bot.* 1872, 319). It is not for us to decide who is responsible for the delay of nearly a quarter of a century: the Cape Government seems to have done its part, and would no doubt have continued to subsidize so important an undertaking. But we may be allowed to suggest that, essential as it is that the great European collections should be fully consulted, there are now in South Africa men of many years' experience, both in the field and the herbarium, who might well be commissioned to proceed with the work. Mr. Bolus and Mr. McOwan—to mention two names out of several which will suggest themselves—have an unrivalled knowledge of the Cape flora, and the former is no stranger to European herbaria. We believe that Harvey's collections could be lent for the purpose, as well as others from Europe; and Mr. Bolus on his next visit could do much, with his already acquired knowledge, to set the work once more on foot.

The *Flora of Tropical Africa* was carried on with some regularity under the editorship of Prof. Oliver from 1868, when the first volume was issued, until 1877, when the third volume, terminating with the *Ebenaceæ*, appeared. Then, for a period of fifteen years, nothing was published, although the Government, which is responsible for financing the work, had not been idle. On March 21, 1891, Lord Salisbury communicated to the Director of Kew Gardens his anxiety "that the completion of the work should at once be carried out"; this letter was printed in the *Bulletin of Miscellaneous Information* for January, 1894, with a note that "at Kew vol. iv. of the Flora is in active preparation." With the exception, however, of three somewhat hastily prepared* papers describing new species, the last of which appeared in April last, nothing has so far been published, and we have reason to believe that the MS. of the volume has not yet been sent to press. Among the many inconveniences arising from this delay is the distribution through herbaria of a large number of MS. names, some of which find their way into print; but we reserve what we have to say on this head until we have an opportunity of discussing at greater length than would be possible here the whole question of *nomina nuda*. It will be sufficiently manifest from what has been said that at the present rate of publication neither of the Floras in progress will reach the Monocotyledons for several years, and that many of the botanists now living cannot hope to see their completion. Very wisely, therefore, have MM. Durand and Schinz decided to begin with these plants, and although, when the *Conspectus* is finished, it may seem odd to find vol. i. bearing a later date than any of those succeeding it in numerical order, such an inconvenience will be readily overlooked in view of the great boon they have conferred upon botanists by the prompt publication of this carefully compiled work.

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* See *Journ. Bot.* 1894, 85. It may be noted that the names *Cordia obovata* (*l. c.* 28) and *Ehretia macrophylla* (*l. c.* 29) are preoccupied: *Cordia obovata* Balf. fil. in *Proc. R. Soc. Edinb.* xii. 80, and *Ehretia macrophylla* Wall. in Roxb. *Fl. Ind.* (ed. Carey), ii. 343, preceding these by several years. It seems undesirable that the African plants should remain unnamed, and we propose for each the specific name *Bakeri*.

The aim of the *Conspectus* being merely to provide an index of African plants, no attempt is made at a scientific arrangement of the species. These are arranged in alphabetical order under the names which are retained by the most recent monographers, or claim recognition on other grounds. While fully recognising the limitations of space, we regret that there is no way of finding synonyms other than by hunting steadily through the genus for them. Some index to these, at any rate in the larger genera, should have been provided: the plan adopted in Sereno Watson's *Index to North American Botany*, where at the end of each genus is given a list of reduced names with their equivalents, takes little space, and is as convenient as any. We commend this suggestion to the compilers, hoping that they may see their way to adopt it in the forthcoming volumes. In *Cyperaceæ*, for example, where the same plant has been described in numerous genera, the labour of finding a *Cyperus* is somewhat serious; the genus as it here stands occupies about forty pages, and the introduction of Mr. C. B. Clarke's rearrangement of the genera may render a search necessary through at least as many more. For the genera, M. Durand's most useful *Index Generum* has been followed, with such additions and alterations as the six years which have elapsed since its publication have rendered necessary.

The objection that the work, from its extent, contains several distinct floras, is also met by remembering that it is merely intended as an index of what has been done. The future authors of *Flora Capensis* or the *Flora of Tropical Africa* will be grateful for having so much material thus brought to their hand; from the *Conspectus*, too, we shall be able to make a list of the Madagascar plants now scattered through so many periodicals, and never hitherto brought together. Not only are full references given to each important publication for the species, but collectors' numbers, whenever known, are cited—a help to the herbarium botanist which the *Flora of Tropical Africa* and other Kew publications too often fail to supply.

Although original work is not to be looked for in a work of this kind, the compilers have supplied it in the shape of a new arrangement of the *Irideæ* by Dr. F. W. Klatt, and a rearrangement of the *Cyperaceæ* by Mr. C. B. Clarke, in accordance with the monograph which he has prepared for the *Suites au Prodromus*. As is well known, Dr. Klatt takes a much more restricted view of species than Mr. J. G. Baker, the most recent monographer of the order; and we are inclined to regret that the latter author has not been followed, although the dictum of the compilers—"Il nous semble que M. Baker réunit trop et M. Klatt pas assez"—is probably in accordance with the facts of the case.

Mr. Clarke's enumeration of the *Cyperaceæ* occupies nearly two hundred pages, and is interesting not only because of the manifest care with which it is carried out, but as affording an indication of the lines which his monograph will follow. We hope to notice this important contribution to systematic botany when it appears, and therefore do not propose to discuss the arrangement now; but we cannot help calling attention to the very large number of new names which the enumeration contains. Many of these, of course, are the result of transference, and in such cases are scarcely *nomina nuda;* and in many other instances the plants intended are indicated by a collector's number, and can be thus identified. But there remain instances in which no such determination can be made, and the usual kind of indication where they will ultimately be published is omitted. Whether under the exceptional circumstances such publication can be justified is a matter of opinion; but there can be little doubt as to the value of Mr. Clarke's contribution to the *Conspectus.*

There are of course small points open to criticism in matters of detail, but the work as a whole is singularly well done. The dates of printing of different parts of the volume, which are thoughtfully given on the back of the title, must be borne in mind by those who use the work, or they may be inclined to think certain omissions culpable rather than—as they are—inevitable. The first 142 pages, for example, were printed off in 1892, which of course accounts for the omission of the orchids described by Dr. Kränzlin in *Bot. Jahrbuch*, xvii. 48–68 (1893).* *Aristea Lastii* Baker (*Handb. Irid.* 142 (1892)) and *A. paniculata* Pax (in *Bot. Jahrb.* xv. 151) are certainly the same; but it is not quite easy to determine which takes precedence, on account of the omission of dates of publication from this volume of the *Jahrbuch*—an omission which we are glad to see rectified in the most recent volume. Dr. Klatt does not seem to have noticed the identity of the two plants; he cites 1892 as the date of publication of *A. paniculata*, which is likely to be correct, though the volume bears date 1893; but in that case both were published in the same year. A similar difficulty occurs with regard to *Acidanthera gracilis* Pax and *A. zanzibarica* Baker, but in this case Dr. Klatt reduces the latter as a synonym. The compilers can hardly be blamed for not having detected the blunder in the Linnean Society's *Journal* (*Botany*, xxix.), by which, both in text and on plate, *Holothrix madagascariensis* is referred to *Habenaria Elliotii.*

As is almost inevitable in a work of this kind, there are omissions, the most troublesome, perhaps, being those which result from the imperfect citation of the species contained in an easily accessible paper. For example, of the thirteen new monocotyledons described in Mr. Scott Elliot's 'Novitates Capenses' (*Journ. Bot.* 1891, 70–74), six are altogether omitted—among them a genus not included in the *Conspectus;* three are cited from Mr. Baker's *Handbook of Irideæ;* one from the *Journal of the Linnean Society* (!); and only three from the place of original publication: of two species of *Anthericum*, one is taken and the other left. A similar case of partial citation occurs with regard to vol. v. of the *Boletim da Sociedade Broteriana;* two plants therein described—*Pandanus thomensis* Henriques (p. 206) and *Ctenium Newtonii* Hackel (p. 229)—are not in the *Conspectus.* The names of Welwitsch's *Apontamentos* are in many cases left out, as will be seen by comparing the *Conspectus* with the article on these in our present number. *Hæmanthus bivalvis* and *Littonia Hardeggeri,* described by Dr. Günther von Beck in Paulitschke's *Harar* (1888), are not included, and the work does not appear to have been consulted.

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* It may be noted that *Bulbophyllum compactum* Kränzl. *l. c.* 48 = *B. coriophorum* Ridl. in *Journ. Linn. Soc.* xxii. 119 (1886); both are founded on Humblot, 337.

Misprints are almost absent, though *Sporobolus Melleri* (p. 822) should be *Molleri.* It may be well to supply the number (714) of the Welwitsch plant on which Reichenbach founded his *Habenaria huillensis;* it was (evidently by accident) omitted from his description, but the plant was written up by him in Welwitsch's herbarium. The index seems to have been carelessly revised, and contains many wrong references.

We venture to take exception to the citation of this Journal (p. 245), &c., as "Britt. Journ. Bot. 1878," not only because the abbreviation "Britt." is open to misunderstanding, but because as a matter of fact the present editor did not occupy that position in the year cited. The quotation of our volumes by the names of the editors is not only unnecessary,—"Journ. of Bot." and the year amply suffice,—but very frequently inaccurate, notably in the *Flora of British India.**

Our high opinion of the value of the *Conspectus* will have been sufficiently manifest from what has been said: it only remains to express our hope for its speedy completion.

James Britten.

Flora of Nebraska. Published by the Botanical Seminar, University of Nebraska. I. Introduction. Part i. Protophyta—Phycophyta. Part ii. Coleochætaceæ—Characeæ. Lincoln [U.S.]. 1894. 8vo, pp. 128; xxxvi plates.

The University of Nebraska has undertaken, by its Botanical Seminar, a great work, and we wish it strength to carry it through. It is going to describe the entire Flora of the State, freely illustrating the lower plants, and to complete the book in twenty-five parts, at a dollar the part. We have here the first instalment, and it bears the marks of resolution, and an independent desire to hold its course. Its course is not always that of other floras, and in a monotonous life one does not wish it to be so; and honestly, where it exhibits novelty, it is often an improvement. We had hoped, however, that in the classification of the Cryptogams the day had gone past when Fungi and Algæ were mixed up in the bad style of the Sachs Textbook. It was bad enough in a morphological treatise; it is vexatious in a flora. On this side of the Atlantic systematic students have rarely leisure or longevity enough to tackle more than one of these enormous groups, and it would have been better to treat them separately from the mere consideration of convenience. However, this is the beginning of a great undertaking; it would be easy to find faults; we do better to wish it all success, and we hope to give from time to time notices of its progress. The plates, if somewhat diagrammatic, are a very useful part of the work, and the book will have a value to students of Botany, far from Nebraska, on general botanical grounds.

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* *E.g.* vol. iv. pp. 81, 648, 659, where "Trimen Journ. Bot. 1868" is cited; Dr. Trimen did not become editor until 1872.

G. M.

Practical Physiology of Plants. By F. Darwin, M.A., F.R.S., and E. H. Acton, M.A. Cambridge: University Press. 1894. 8vo, pp. xviii, 321, with 43 illustrations in the text. Price 6s.

This is the second volume in the Biological Series of the Cambridge Natural Science Manuals which Mr. Shipley is editing, and the first botanical work. Like several other practical manuals, it originated in the written instructions necessary to a class of students actually carrying out the experiments, and should therefore be free from the faults and pitfalls characteristic of a mere compilation. In the first instance, however, the directions were materially supplemented by the presence and help of the teacher and author, and if their extension and elaboration in the little book before us is to prove useful to a wider circle of students, the mediation of an efficient teacher will be indispensable. Such a one will find the directions sufficient, and as a large number of the experiments require only simple apparatus, the work will be welcomed in colleges and schools where modern methods are in vogue.

There are two parts—Part i., on General Physiology, essentially botanical; Part ii., on Chemistry of Metabolism, essentially chemical. The first, occupying two-thirds of the whole, is divided into eight chapters, and deals with processes of respiration, assimilation, including production and reactions of chlorophyll, further stages of nutrition, transpiration, the physical and mechanical properties involved in osmosis, turgor, tissue-tensions, &c., the phenomena associated with growth, and the various movements of adult members, whether spontaneous or in response to special stimuli. The second part, chapters 9–17, is a classified guide to the preparation and separation, and the qualitative or quantitative examination, of the numerous and varied substances occurring in the plant-tissues, a knowledge of which is essential to a proper understanding of the constructive and destructive processes involved in the life of a plant. It affords material for an interesting course in a chemical laboratory.

As already hinted, the book is not one to put into the hands of the unaided student, and there are instances where the more advanced worker would welcome a little more information. For instance, on p. 35, under the heading, "Evolution of Oxygen," following several experiments by which the evolution of oxygen from living plants can be demonstrated, we find reference to Dehérain's method. A current of air is drawn through a glass tube lined with leaves, and exposed to bright light. After slowly traversing the tube, the air is made to bubble through baryta-water, which is said to remain clear, while a current of the same rapidity passed through an empty tube clouds the solution. It will puzzle the reader to understand how evolution of oxygen is thereby demonstrated. In the experiments on the nutrition of Fungi, some explanation of "sterilise" and "sterile," with brief directions for the process, would have been a valuable addition.

There is one other point to which we would call attention in this excellent little manual, to wit, the expression *destarched*, an ugly word, recalling the equally offensive "detrain." Of course we should have liked twice as many illustrations, but these unfortunately seriously increase the price of a book. A. B. R.

ARTICLES IN JOURNALS.

Bot. Centralblatt (No. 4). — E. Knoblauch, 'Zur Kenntniss einiger Oleaceen-Genera.' — (Nos. 4, 5). J. M. Macfarlane, 'Sensitive Movements of Plants under coloured screens.' — (No. 6). M. Britzelmayr, 'Die Hymenomyceten in Sterbeeck's *Theatrum Fungorum.*' — (No. 7). G. Haberlandt, 'Ueber einige Modelle für den botanischen Unterricht.' — H. Kionka, 'Joseph Schröter' (b. Mar. 14, 1837; d. Dec. 12, 1894).

Bot. Gazette (Jan. 18). — J. D. Smith, New plants from Guatemala (*Chaunostoma*, nov. gen. Labiatarum): (3 plates). — D. S. Johnson, 'Crystallization of Cellulose.'

Bot. Magazine (Tokio)—(Dec. 20). T. Makino, '*Gymnogramme Makinoi* Max.' (1 plate).

Bot. Zeitung (Feb. 1). — F. Hildebrandt, 'Ueber die Empfindlichkeit gegen Richtungsveränderungen bei Blüthen von *Cyclamen*-Arten' (1 plate).

Bull. de l'Herb. Boissier (Jan.).—A. Tonduz, 'Herborisations au Costa Rica' (1 pl.). — E. Bonnet, 'Lettres de Linné à David van Royen.' — A. de Coincy, *Linaria Gobautesiana*, sp. n. — J. Freyn, 'Neue orientalische Pflanzenarten.'

Bull. Soc. Bot. France (xli: Sess. extraordinaire, pt. 1).— F. X. Gillot, 'Colonies végétales hétérotopiques.'—H. Jaccard, '*Echium vulgare* var. *valesiacum.*' — E. Bourquelot, 'Éther méthylsalicylique dans les plantes.' — L. Mangin, 'Classification des mucilages.' — H. Hue, 'Le genre *Palisota.*' — C. Flahault, 'Carte botanique, forestière et agricole de la France.'—J. Huber, *Aphanochæte repens* (1 pl.). — L. Guignard, 'L'émulsine dans le genre *Manihot.*' — A. Magnin, 'Flore des lacs du Jura' (2 pl.). — A. Rodrigue, 'Mouvements des feuilles des Légumineuses et des Oxalidées.'—R. Chodat, *Monostroma bulbosum* (1 pl.).

Bull. Torrey Bot. Club (Jan. 15). — J. H. Barnhart, 'Family Nomenclature.'—A. M. Vail, 'Revision of *Cracca*' (*Tephrosia* auct.).

— E. G. Britton, 'Revision of *Scouleria*' (1 pl.). — J. K. Small, 'Botany of South-eastern U. S.' — L. F. Henderson, 'Botany of Idaho.'

Erythea (Feb.). — E. L. Greene, 'Novitates occidentales.' — M. A. Howe, 'Early History of Hepaticology.' — E. Stizenberger, 'Western Lichens.'—T. Howell, 'New Pacific Coast Plants.'

Gardeners' Chronicle (Jan. 26). — *Polypodium nigrescentium* Jenman, sp. n. — (Feb. 2). *Aspidium basiattenuatum* Jenman, sp. n. — (Feb. 9). *Cypripedium Wolterianum* Kränzl., sp. n.

Journal de Botanique (dated Dec. 1–16; issued Feb.). — C. Flahault, 'Pierre Duchartre' (Oct. 27, 1811–Nov. 5, 1894). — A. Franchet, *Centaurea fraylensis*. — G. Bertrand & A. Mallevre, 'Recherches sur la pectase.'—J. Daveau, 'Sur l'aire d'extension du Pin sylvestre.'

Journ. Linn. Soc. (Bot.): (xxx, No. 210: Feb. 5). — R. Spruce, 'Hepaticæ Elliottianæ'* (11 plates).—A. B. Rendle, 'Contributions to Flora of E. Tropical Africa' (4 plates).

Oesterr. Bot. Zeitschrift (Feb.). — F. Pax, New Carpathian *Hieracia* (1 pl.). — J. v. Sterneck, *Alectorolophus* (cont.). — J. Lütkemüller, *Spirotænia* (cont.: 1 pl.).—J. Freyn, 'Plantæ Karoanæ Dahuricæ.' — F. Arnold, 'Lichenologische Fragmente.' — A. v. Degen, *Peucedanum macedonicum* & *Malabaila obtusifolia*.

BOOK-NOTES, NEWS, &c.

Dr. Stapf's paper "On the Flora of Mount Kinabalu, in North Borneo" occupies the last issue (2nd S. vol. iv. pt. 2) of the *Transactions of the Linnean Society*, and appears to be an excellent piece of work. The enumeration is prefaced by an account of the various explorations of the mountain previous to and including Dr. Haviland's expedition in 1892,—on the results of which the paper is based,—of the geology, biological features, endemism (109 out of 342 phanerogams are endemic), affinities, means of dispersion, &c. Among the more interesting novelties, which are very numerous, are a new genus of *Boragineæ* near *Myosotis*, aptly named *Havilandia* in commemoration of the leader of the 1892 expedition, and *Scyphostegia*, a new genus of *Monimiaceæ*. Dr. Stapf has been helped by Mr. Ridley (orchids), Mr. C. B Clarke (*Cyperaceæ*), Mr. J. G. Baker (ferns), and Mr. C. H. Wright (mosses). The paper, which was read on June 15, 1893, and issued in December, 1894, is illustrated by ten plates drawn by Mr. C. H. Fitch.

Apropos of changes of name, we note that the *Gardeners' Chronicle* (Jan. 19) comes out strongly in favour of that principle (?) of "practical expediency" as a guide to nomenclature, the illogical nature of which has been more than once demonstrated in these pages. M. Crépin, it appears, objects to the strict adoption of the law of priority, and to those "who wish to reconstruct imperfectly or erroneously constructed names"—in which latter particular we are at one with him. The *Chronicle* supports M. Crépin, and adds the following moral remarks:—"Botany is not for the glorification of present workers, nor for the canonization of those that are past. It is for the advancement of the knowledge of all that concerns the life and attributes of the vegetable kingdom. Those who wantonly put obstacles in the way incur a very heavy responsibility." With these statements—although we do not understand the reference to canonization—we should no more think of quarrelling than with the multiplication table; but we fail to see their connection with the points at issue. It will be time enough to discuss "practical expediency," otherwise known as "the plea of convenience," seriously when its advocates have told us what circumstances are to be held as justifying the retention of more recent names, and who is to be the judge in the case.

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* See p. 95.

The ladies who visit Switzerland every summer, and bring back for the torment of their botanical friends scraps of plants collected in their wanderings, will save themselves and others much trouble if they will buy and use the little *Flore Coloriée de Poche* which M. Correvon has lately brought out (Paris, Klincksieck) "à l'usage du touriste dans les montagnes de la Suisse." It contains 180 coloured figures, intercalated in the text, and descriptions of nearly 600 plants, excluding grasses and sedges—an omission which will not affect its usefulness for those for whom it is intended. It is a handy little book, just the thing for the many to whom Gremli's admirable *Flora of Switzerland* presents only a series of conundrums. It is very cheap—6 fr. 50, or 5s. 3d. post free. The author drops into poetry now and then.

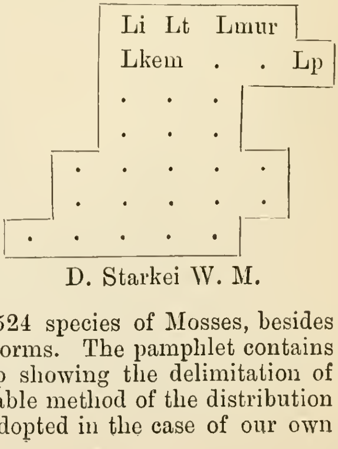
The latest issue (Feb. 5) of the *Journal of the Linnean Society* (Botany) contains the paper on the *Hepaticæ* collected by Mr. W. R. Elliott in the British West Indies, on which Mr. Spruce was engaged at the time of his death. The paper was left in a very incomplete state, and has been edited with great care by Mr. Gepp. So much, indeed, has been supplied in the way of expansion, addition, and reference, that it is to be regretted that the Linnean Society did not make some acknowledgement in the title of Mr. Gepp's share in the work. The modest statement in the prefatory note by Mr. Gepp appended to the paper by no means does justice to the amount of time and trouble which he expended upon its preparation for the press, which included the supervision of the eleven excellent plates which accompany it. The other paper in the number is by Mr. Rendle, and deals with petaloid and other monocotyledons collected in Eastern Tropical Africa by Dr. Gregory and the Rev. W. E. Taylor, and deposited in the British Museum Herbarium. A large number of novelties are described.

The numbers for December and January last of the (Kew) *Bulletin of Miscellaneous Information* were issued during February; the former is entirely devoted to matters of commercial interest, but the latter contains descriptions of new plants, and the actual date of their publication should be noted. We are glad to observe that our animadversions on the index to previous volumes of this work have been followed by a great improvement in that for 1894. The Trinidad Garden also issues a *Bulletin of Miscellaneous Information*, which is now printed in a convenient form, and appears with promptitude—the January number reached us during the month of issue. It is to be regretted that some distinctive appellation is not added to the titles of these publications; Mr. Fawcett has avoided possible inconvenience by calling his journal the *Bulletin of the Botanical Department, Jamaica.* His issue for Oct.–Dec. is devoted to an interesting guide to the Castleton Gardens. We note that these colonial publications are supplied free to residents in the island they represent.

A somewhat similar publication to the foregoing has been established at Berlin in the *Notizblatt des Königl. Botanischen Gartens und Museums zu Berlin*, of which the first number appeared in January. It is mainly devoted to notes upon, and descriptions of, new plants—mostly African—by various Berlin botanists, including two new genera—*Traunia* K. Schumann (*Asclepiadeæ*), from Kilimandscharo, and *Callopsis* Engler (*Araceæ, Pothoideæ*), from Usambara.

A new section of the British Association has been formed for Botany alone. At present the sections run from A to H, so that Botany will be section I. The Director of Kew Gardens has been fittingly selected as first President of the section.

Very ingenious is the system of diagrams adopted by Messrs. J. O. Bomansson and V. F. Brotherus (*Herbarium Musci Fennici: Editio secunda: ii. Musci.* Helsingforsiæ, 1894) to show at a glance the distribution throughout the twenty-eight botanical provinces of Finland of the native species, varieties, &c., of Mosses and Hepatics. The specimen diagram here given represents the distribution of *Dicranum Starkei* Web. & Mohr., and will be seen to be composed of the ordinary type material of the printing-house. The outline is roughly that of Finland, and the provinces indicated are Lapponia inarensis, tulomensis, murmanica, kemensis, and ponojensis. The introduction is printed in Swedish and French in parallel columns. In the enumeration are cited 171 species of Hepatics and 524 species of Mosses, besides some 190 subspecies, varieties, and forms. The pamphlet contains nearly ninety pages, and a large map showing the delimitation of the botanical provinces. The admirable method of the distribution diagrams might with advantage be adopted in the case of our own museum catalogues.—A. G.



D. Starkei W. M.

REVISION OF THE AFRICAN SPECIES OF ERIOSEMA.

By Edmund G. Baker, F.L.S.

The first mention of *Eriosema* is in DeCandolle's *Prodromus* (ii. 388 (1825)). It there constitutes a section of the genus *Rhynchosia*, although there is a note saying that it may be a good genus intermediate between *Rhynchosia* and *Flemingia*. The sectional characters given are as follows:—"Foliis brevissime petiolatis, foliolis nunc 3 unijugis cum impari, nunc 3 fere ex eodem puncto ortis, nunc solitariis. Racemi aut fasciculi florum axillares. Vexillum sericeo-villosum. Caules non scandentes." Eight species are enumerated, but, with the single exception of *R. psoraloides* DC., from Madagascar, they are from the New World.

Desvaux (*Ann. Sc. Nat.* Ser. 1, ix. 421 (1826)) was the first to give *Eriosema* generic rank. It is there spelt, however, *Euriosma*, but there can be no doubt of the identity of the two, as he gives a diagnostic character, and also refers to it as a division of the *Rhynchosiæ* established by DeCandolle. Three species are here given—*E. sessiliflora* (*Rhynchosia sessiliflora* DC. *l. c.* 389), from the Antilles; *E. argentea* (*Podalyria trifoliata* Willd. *l. c.* 504, from the Cape, which is now *Argyrolobium sericeum* E. & Z.); and *E. barbata*, from Peru.

Reichenbach, in his *Conspectus* (1828), 150, is, I think, the first who adopts the spelling of *Eriosema* now accepted, and uses the name generically. In 1832, E. Meyer, in *Linnæa* (vii. 171), published a species from the Cape, *E. chrysoposta*, which has since been referred to *Rhynchosia;* and in 1835 he published the first portion of his *Commentary* on the South African plants collected by Drège, in which nine species are described; some of these have since been relegated to other genera. In 1836 the portion of Ecklon and Zeyher's *Enumeration* containing the *Leguminosæ* appeared; in this two species are described for the first time, *E. puberulum* and *E. sericeum*, but neither of these is included in *Eriosema* in Harvey and Sonder's *Flora Capensis*.

Meisner, in his 'Contributions towards a Flora of South Africa' (*London Journal of Botany*, ii. 91 (1843)), published one new species, *E. Kraussianum*. The other species which are referred to in this paper have been described for the most part either in A. Richard's *Tent. Fl. Abyssinicæ*, Hooker's *Niger Flora*, Peters' *Mossambique*, or the *Flora of Tropical Africa*.

Welwitsch (*Apontamentos*, 573 (1858)) founds a new genus, *Muxiria*, on a plant collected on the banks of the river Cuanza, near Mopope, in the Pungo Andongo district of Angola, which he names *M. utilis*. It is a shrub with yellow or sometimes blue flowers, having a densely hairy calyx, but with the biovulate pods of *Eriosema*. I have followed my father in reducing it to this genus.

Eriosema is so nearly allied to *Rhynchosia* on the one hand, and *Flemingia* on the other, that it seems advisable to recapitulate the characters at somewhat greater length.

ERIOSEMA DC. *Prod.* ii. 388 (sect. *Rhynchosiæ*); Desv. in *Ann. Sc. Nat.* Ser. 1, ix. 421 (errore *Euriosma*); Reichenbach, *Conspectus*, 150; Hooker's *Niger Flora*, 313; Bentham in *Fl. Brasil.* xv. pt. i. 206; Harvey & Sonder, *Fl. Capensis*, ii. 258; Klotzsch, in Peters' *Mossamb.* t. 6; *Genera Plantarum*, i. 543; Baker in *Fl. Trop. Afr.* ii. 223; Baillon, *Histoire des Plantes*, ii. 261; Engler, *Hochgebirgsflora*, 272. Radix simplex vel crassa et lignosa vel napiformis vel fusiformis. Herbæ vel suffrutices, erectæ, prostratæ vel volubiles. Folia pinnatim 3-foliolata rarius simplicia, subtus punctis resinosis, quam in *Rhynchosia* minus conspicuis conspersa. Stipulæ ovatæ vel lanceolatæ, liberæ vel in unam oppositifoliam connatæ. Flores flavi rarissime cœrulei vel rubri, vexillo interdum purpureo vel violaceo et sæpe rufo vel griseo-villoso, in racemis axillaribus vel terminalibus vel in capitulis axillaribus dispositi, rarius ad axillas subsolitarii. Calycis lobi omnes distincti vel 2 superiores rarius breviter connati; tubo breviores vel æquilongi vel longiores. Vexillum obovatum vel oblongum, basi auriculis inflexis appendiculatum, alæ angustæ, carina apice leviter incurva obtusa. Stamen vexillare liberum, cætera connata, antheræ uniformes. Ovarium 2-ovulatum. Legumen rectum compressum, oblique orbiculatum rhombeum vel late oblongum, 2-valve intus continuum 2 rarius 1 spermum. Semina compressa, funiculo ad extremitatem hili linearis affixa estrophiolata.

Eriosema generally differs from *Rhynchosia* in habit; in the former the stem is usually more or less virgate and erect, while the latter are more often twining herbs or shrubs, but this is by no means always the case. The best character for distinguishing the two genera lies in the seed, which in *Eriosema* has the funiculus at the end of the hilum, while in *Rhynchosia* the funiculus is centric or subcentric on the hilum.

Flemingia may be distinguished by its turgid pod, the seeds having the funiculus centric on the hilum, and the leaves being digitately trifoliolate or rarely simple. In the *Flora of Tropical Africa* there are three species of *Flemingia*. *F. rhodocarpa* Baker has been described and figured by Günther Beck in Paulitschke's *Harar* as *Eriosema erythrocarpon*. The ovules are centrally attached as figured, and I think the plant must therefore be kept in *Flemingia*. In the *Index Kewensis* it has been reduced to *F. congesta* Roxb. The simple-leaved *F. oblongifolia*, on the other hand, has, if I mistake not, the ovule attached at the end of a linear hilum, and must either be considered an anomalous species of *Flemingia* or transferred to *Eriosema*.

A. Caulis erectus herbaceus vel sublignosus. Folia simplicia. Inflorescentia racemosa. Calyx brevis.

* Folia lanceolata.

1. E. Afzelii Baker in *Fl. Trop. Afr.* ii. 225. *Rhynchosia Afzelii* R. Br. in Herb. Mus. Brit.!

Hab. Sierra Leone, *Afzelius*!

A very distinct species, of which I have only seen a single specimen. The stem is erect, herbaceous, 1½–2 ft. high, or possibly more, somewhat angled below, and densely clothed with grey woolly pubescence. The flowers are borne in a dense terminal raceme, or almost a spike, which is about 4 in. long. The calyx-teeth are very short and deltoid.

** Folia elliptica, ovata vel late ovato-lanceolata.

+ Racema terminalia.

2. E. POPULIFOLIUM Benth. in *Fl. Capensis*, ii. 259.

Hab. Transvaal, *Sanderson* !

The stem is erect, about 8 in. long, or possibly more. The leaves are ovate, cordate, thick, about 4 in. long and about the same broad, the younger leaves especially being covered with a silky tomentum. The raceme of flowers is about 1 in. long.

3. **E. pulcherrimum,** n. sp. Caulis erectus herbaceus angulatus, præcipue superne albo-tomentosus, e radice lignoso ortus; foliis magnis simplicibus ellipticis vel ovatis, junioribus utrinque albo-tomentosis, adultioribus coriaceis superne lævibus, glabris vel subglabris penninervatis, basi cordatis vel subcordatis, apice subacutis; floribus in racemo terminali longo dispositis, calycibus villosis, sepalis lanceolatis, leguminibus villosis 2-spermis, seminibus lævibus rubro-brunneis.

Hab. Djur Land, Grosse Seriba Ghattas! *Schweinfurth*, 1409, 1802 !

Stem erect, herbaceous, angled, about 1 ft. high, especially above covered with soft white tomentum proceeding from a woody rootstock. Stipules lanceolate. Leaves large, ovate, 4–7 in. long, 2½ to nearly 4 in. broad, base subcordate, apex rounded or subacute, penninerved; young leaves covered with white or silky tomentum, when older almost glabrous on the upper surface, coriaceous. Raceme dense, terminal, 2–4½ in. long; flowers depressed, nearly ½ in. long. Bracts lanceolate, acuminate. Calyx covered with grey villose hairs; sepals lanceolate, acute; petals longer than the calyx; standard pubescent externally. Legume covered with grey villose hairs; seeds 2 lines long, 1½ lines broad, smooth, reddish brown. Seed attached to end of linear hilum.

Allied to *E. populifolium* Bth.

+ + Racema subglobosa axillaria et terminalia.

4. **E.** (?) **holophyllum,** n. sp. Caulis erectus subligneus pubescens ramosus; stipulis lineari-lanceolatis, foliis magnis simplicibus ovato-lanceolatis, basi rotundatis vel cuneatis subcoriaceis subtus reticulatis, petiolis brevibus; floribus racemosis, racemis subglobosis axillaribus et terminalibus, leguminibus oblique mucronatis villosis 2-spermis, seminibus lævibus rubro-brunneis.

Hab. Niamniam Land, Gumba, *Schweinfurth*, 3934 !

Stem erect, subligneous, branched, 18 in. high, terete, pubescent. Stipules linear-lanceolate, rather more than ¼ in. long. Leaves large, simple, ovate-lanceolate, 3½–6 in. long, base rounded or cuneate, apex roundish, penninerved, both sides finely pubescent, reticulate, veined underneath; petiole very short. Raceme subglobose, terminal and axillary; pedicels generally 2-flowered; bracts linear, pubescent. Flowers not seen. Legume oblong, villose, obliquely mucronate, ⅔ in. long, ¼ in. broad, 2-seeded; seeds reddish brown, oval, glabrous, smooth, nearly 2 lines long.

This plant is allied to the preceding species, so I have placed it in this genus. The seed, however, is centrally or subcentrally attached, but the legume is almost flat.

(To be continued.)

ON THE RUBI LIST IN 'LONDON CATALOGUE,' ED. 9.

By the Rev. W. Moyle Rogers, F.L.S.

(Concluded from p. 82.)

R. rudis W. & N. No. in Set, 16. 10 v.-c. (6, 13, 15, 17, 22–24, 34, 36, 57). I.

R. præruptorum Boul. No. in Set, 15. 6 v.-c. (7, 9, 16, 20, 21, 64). [4, 23, 27]. A very marked plant as represented by the Dorset specimens in the Set, but I am not sure that I have seen quite the same from any other county. The name rests on Prof. Babington's authority, *Journ. Bot.* 1878, 142, 143; 1886, 228. An Anglesey and Carnarvonshire plant, discovered by Mr. J. E. Griffith, and abundant in the Bangor neighbourhood, may perhaps best take rank as a strongly marked var. of this.

R. melanodermis Focke, *Journ. Bot.* 1890, 133; 1892, 302. No. in Set, 17. 4 v.-c. (3, 9, 11, 34). Very distinct. Locally abundant through the greater part of Dorset and S.W. Hants.

R. Babingtonii Bell-Salt. *Journ. Bot.* 1886, 228. 15 v.-c. (5, 9, 11, 12, 15–17, 22, 23, 27, 34, 36, 38, 49, 58). As I saw it last summer in Berks and Surrey, easily recognized with its large cylindrical panicle, densely hairy rachis with many small prickles and sunken glands, short stamens, and patent fruiting sepals. The supposed *R. festivus* from Crowell, referred to in *Journ. Bot.* 1893, 45, is, I believe, a form of this.

[R. Lejeunei W. & N.], var. b. *ericetorum* Lefvr.? 7 v.-c. (9, 12, 14, 16, 17, 22, 36). [2–4, 38, 88]. It is doubtful whether true *R. Lejeunei* exists in Britain. Dr. Focke thinks that the plant found in the six vice-counties enumerated above is rather *ericetorum* than *Lejeunei*. It is near *R. Babingtonii*, but differs by long stamens, reflexed fruiting sepals, and a laxer and more pyramidal panicle, with shorter hair, and more unequal armature. The leaflets are also more narrowed to the base, and of a brighter green. Both these plants will be included in Fascicle IV. of the Set, as there is some uncertainty attached to the specimens already issued as "*R. Lejeunei* W. & N." (No. 42).

R. cavatifolius P. J. Muell. *Journ. Bot.* 1892, 335. No. in Set, 68. 8 v.-c. (2, 11, 17, 26, 28, 34–36). [21, 39].

R. MUTABILIS Genev. *Journ. Bot.* 1892, 336 (for type and var. b.). No. in Set, 44. 4 v.-c. (5, 6, 13, 17). [21 and "Cleves, Yorks."].

Var. b. *nemorosus* Genev. No. in Set, 69. 1 v.-c. (3).

R. BLOXAMII Lees. No. in Set, 20. 16 v.-c. (3, 8–11, 17, 22, 23, 37, 38, 40, 49, 55, 63, 64, 66). I. [21, 61].

R. SCABER W. & N. 13 v.-c. (3, 5, 6, 15, 17, 22, 23, 34–36, 38, 39, 57). I. [4, 11, 13, 16, 19-21, 29, 33, 37, 40, 49, 55, 62]. Still very imperfectly known to most of us.

R. OBSCURUS Kalt. *B. E. C. Rep.* 1893, 408 (first paragraph). 2 v.-c. (7, 36). Not the plant referred to in *B. E. C. Rep.* 1890, 295, and described in *Journ. Bot.* 1892, 339, under this name. That will be found below, under *R. rosaceus*, as var. *Purchasianus*. The true *obscurus* is nearer to *R. leucostachys* and *R. pyramidalis*, but much more glandular, with sepals patent after flowering, and petals "vivid pink."

R. FUSCUS W. & N. *Journ. Bot.* 1892, 303 (for type and var. b.). No. in Set, 18 (not always well represented). 18 v.-c. (6, 8, 16, 18, 22, 23, 27, 31, 34–38, 40, 50, 55, 57, 65). I. [3, 17]. Still a very aggregate species, as understood among us.

Var. b. *nutans* Rogers. 3 v.-c. (11, 16, 38).

Var. c. *macrostachys* (P. J. Muell.). 3 v.-c. (22, 36, 58). I. The E. Norfolk *fuscus* (N. Walsham, *E. F. Linton*) approaches this form, which has a somewhat more pyramidal panicle than the typical plant, with remarkably hairy rachis, and leaves white-felted beneath.

R. PALLIDUS W. & N. *Journ. Bot.* 1886, 308; 1892, 304. No. in Set, 67. 16 v.-c. (3, 4, 6, 11, 16, 23, 27, 28, 30, 35, 36, 38, 40, 43, 58, 62).

R. LINTONI Focke, *Journ. Bot.* 1887, 82. 2 v.-c. (6, 27).

R. THYRSIGER Bab. (as var. of *R. Bloxamii* in *Lond. Cat.* ed. 8); *Journ. Bot.* 1892, 305 (*R. rhenanus* P. J. Muell. ?). 4 v.-c. (2–4, 14). [5, "Dulverton, only once found, 1890," *R. P. Murray*]. It is necessary to restore Prof. Babington's name to this splendid plant (until another not open to objection can be found), because I learn from Dr. Focke that "*rhenanus*" was never described by Mueller, who published the name only (about 1862), *and that as a synonym for Wirtgen's thyrsiflorus.*

R. LONGITHYRSIGER Bab. *R. longithyrsiger* Lees, *Lond. Cat.* ed. 8; but see *Journ. Bot.* 1885, 372. No. in Set, 25. 12 v.-c. (1–5, 16, 34–37, 49, 69). [38].

R. FOLIOSUS W. & N. *R. flexuosus* M. & L. *Lond. Cat.* ed. 8; *Journ. Bot.* 1892, 334. No. in Set, 43. 32 v.-c. (2–6, 9, 11–18, 20–26, 34–40, 46, 55, 57, 62). I.

R. ROSACEUS (sp. collect.), *Journ. Bot.* 1892, 337 (for a, b, e, and f). 51 v.-c. (1–18, 20–27, 33–36, 39–42, 44, 46, 48, 49, 55, 57, 58, 62–65, 67–69, 88, 89, 97). I. It is in a very aggregate sense only that the name *rosaceus* can be rightly applied to most of our plants that have received it.

a. *R. rosaceus* W. & N. *R. G.* p. 85, t. 36. No. in Set, 21. 3 v.-c. (3, 5, 38).

b. var. *hystrix* (W. & N.), *R. G.* p. 92, t. 41. 34 v.-c. (2–7, 9–11, 13, 14, 16–18, 20–23, 26, 27, 33, 34, 36, 38–40, 48, 49, 55, 57, 62, 65, 68, 89). I. [35, 37]. The range of variation here covered is considerable.

Var. c. *silvestris* R. P. Murray, *Fl. Somerset; Journ. Bot.* 1894, 47. 5 v.-c. (1, 3–5, 48). A woodland form, which is probably widespread.

Var. d. PURCHASIANUS Rogers, n. var. *R. Reuteri* Merc. *Lond. Cat.* ed. 8. *R. obscurus* Kalt., *B. E. C. Rep.* 1890, 295; *Journ. Bot.* 1892, 339. No. in Set, 22. Dr. Focke, having seen this growing in Herefordshire last August, is convinced that it must be kept distinct from both *R. Reuteri* and *R. obscurus*, and, he thinks, be placed near *R. hystrix*. I am pleased to be allowed to connect it with the name of the Rev. W. H. Purchas, who observed it in Herefordshire so long ago as 1848. 8 v.-c. (34–37, 59, 62, 91, 92).

Var. e. *infecundus* Rogers. No. in Set, 70. 26 v.-c. (2–4, 6, 12, 16–18, 21–24, 34–42, 49, 55, 57, 59, 97). Much of the *R. hystrix* of former times belongs here.

Var. f. *Lingua* Bab. 2 v.-c. (2, 4).

R. POWELLII Rogers, *Journ. Bot.* 1894, 47. 2 v.-c. (16, 18).

R. ADORNATUS P. J. Muell. *Journ. Bot.* 1892, 338. No. in Set, 71. 16 v.-c. (1, 5, 6, 9, 11, 13, 15, 17, 24, 34, 36, 38, 49, 55, 58, 63).

R. KOEHLERI (sp. collect.). 70 v.-c. (1–9, 11–40, 42, 45, 47–52, 55–59, 61–67, 69, 71–74, 82, 83, 87–89, 100).

a. *R. Koehleri* W. & N. 22 v.-c. (2–4, 8, 9, 11, 13, 17, 18, 20, 22, 23, 26, 32–34, 36, 38, 57, 59, 62, 69). I. Fairly typical, I have reason to think, in the counties here enumerated; but the species is very variable.

Var. b. *pallidus* Bab. (non W. & N.). No. in Set, 45. 59 v.-c. (3–8, 11–14, 17–40, 42, 45, 47, 49–52, 55–58, 60–67, 69, 70, 72, 87, 88, 100). I. A very constant and locally abundant form, especially in the north. Thought by Dr. Focke to be the same as *R. hostilis* P. J. Muell., but, judging from specimens that he has lately thus named, I suspect that he has been misled by something wrongly labelled *R. pallidus* Bab.

Var. c. *cognatus* (N. E. Brown), *Eng. Bot.* ed. 3, Suppl. 101; *Journ. Bot.* 1892, 302. No. in Set, 41. 4 v.-c. (17, 22, 27, 36). Dr. Focke, now that he has seen this growing, agrees with me in thinking it (as represented by the Surrey plant, No. 41 in Set) a good var. of *R. Koehleri*. From *strong* examples of that it seems to me to differ chiefly by the fewer strictly intermediate prickles, the broader and more ultra-axillary panicle, and the subpatent or only loosely reflexed fruiting sepals—characters which perhaps take it some way towards *R. Babingtonii*, the name at first given it by Dr. Focke. I do not include the St. Budeaux and Linton Wood plants, which I think different and not improbably strictly local forms.

R. PLINTHOSTYLUS Genev. *Ess. Mon.* p. 108; *Journ. Bot.* 1887, 22; 1892, 340. No. in Set, 72. 4 v.-c. (2, 9, 34, 73). I now follow Dr. Focke in separating this from *R. Koehleri*, as Prof. Babington indeed did in the first instance.

Other plants allied to *R. Koehleri* which have been found in Britain are *R. distractus* Muell. & Wirtg. (Rudyard, Staffs., *W. H.*

Painter), and "*R. insolatus* Auct., non P. J. Muell. nec Genev." (Shooter's Hill, W. Kent, *A. H. Wolley Dod*); but I have omitted them from our list because the former is probably a hybrid, while of the latter Dr. Focke writes to me: "I think the forms of '*insolatus*' will prove to be a *status horridus* of various glandular Rubi."

R. Marshalli Focke & Rogers, n. sp. *Journ. Bot.* 1892, 340 (*R. Koehleri* var. *hirsutus*). No. in Set, 46. 7 v.-c. (16, 17, 22, 23, 34, 36, 49). The description in *Journ. Bot.* 1892, being fairly full, it seems only necessary to add a few remarks here as the result of Dr. Focke's and my closer observation of the living plant in several counties last summer. Marked features, besides those emphasised in my former description, are the comparative smallness of the leaves, the great length of the lower panicle-branches, which are not always ascending, but often diverging at nearly right angles and forming secondary panicles, and the brownish tint of the young fruits, by which the plant may often be recognized at a distance. The sepals usually become patent soon after the petals fall; and in the Carnarvonshire plant they commonly loosely embrace the young fruit. The hairiness, which is characteristic of the typical plant of the more southern counties, is less marked in the W. Gloucester one, and altogether wanting in the strong Carnarvonshire form, which also has larger flowers, and leaves nearly naked beneath. First observed by the Rev. E. S. Marshall and me in 1890 at Munstead and Witley, S.W. Surrey, it is quite a marked feature of the bramble flora in that neighbourhood (especially at Haslemere), and is evidently widely spread elsewhere in England, though believed by Dr. Focke to be unknown on the Continent.

R. FUSCO-ATER Weihe, *Journ. Bot.* 1894, 48. 2 v.-c. (17, 57). [36].

R. VIRIDIS Kalt. *Journ. Bot.* 1890, 166; 1893, 3. No. in Set, 23. 11 v.-c. (15–18, 22, 23, 34, 35, 38, 43, 55). I.

R. DUROTRIGUM R. P. Murray, *Journ. Bot.* 1892, 15; 1893, 4. No. in Set, 24. 1 v.-c. (9).

R. DIVEXIRAMUS P. J. Muell. *Journ. Bot.* 1893, 4. No. in Set, 47. 4 v.-c. (3, 34–36).

R. ACUTIFRONS A. Ley, *Journ. Bot.* 1893, 13, 45. 1 v.-c. (36). [6, 49].

R. SAXICOLUS P. J. Muell. *Journ. Bot.* 1893, 5. 5 v.-c. (13, 22, 23, 43, 57). I. [5, 35]. A very ill-defined "species" (see *B. E. C. Rep.* 1893, 411).

R. BELLARDI W. & N. *Journ. Bot.* 1893, 5. No. in Set, 73. 10 v.-c. (5, 11, 14, 15, 17, 23, 32, 36, 39, 49). I have seen specimens from all the ten vice-counties here enumerated, and feel no doubt in their determination. The following are much more uncertain [7, 34, 37, 40, 62].

Var. b. *dentatus* Bab. *Eng. Bot.* 3rd ed. Supp. 115. 7 v.-c. (4, 17, 22, 23, 38, 55, 63). A plant not easily placed, appearing somewhat intermediate between *R. Bellardi* and *R. foliosus*.

R. SERPENS Weihe, *Journ. Bot.* 1893, 6. No. in Set, 74. 4 v.-c. (5, 35–37).

Var. b. *rivularis* Muell. & Wirtg. 3 v.-c. (3, 16, 86). Thus described by Dr. Focke in Koch's *Syn.* ed. 3:—"Peduncles densely bristly and aciculate. Stalk of term. lt. longer. Otherwise like *R. serpens.* Damp springy places in woods." So far as I have yet seen it, a very slender form, not so glandular as *serpens*, and with much weaker prickles.

R. HIRTUS W. & K. (sp. collect.). 35 v.-c. (2–9, 11, 13, 15–18, 20, 22–24, 27, 34–40, 42, 44, 48, 52, 55, 62–64, 73). The type is not known for certain in Britain; so the name is used here only in a loose aggregate sense, the comital numbers including vars. b. to e., as well as other *hirtus* forms not distinguished by segregate names.

Var. b. *rotundifolius* Bab. *Eng. Bot.* 3rd ed. Supp. 117; *Journ. Bot.* 1893, 6. 10 v.-c. (2–5, 8, 36–38, 55, 63). [27]. With leaves chiefly 5-nate in some neighbourhoods where it grows abundantly, as in the Teign Valley, S. Devon, and on Chard Common, S. Somerset.

Var. c. *Kaltenbachii* (Metsch.), *Journ. Bot.* 1893, 7. No. in Set, 48. 7 v.-c. (4, 6, 8, 16, 34, 42, 46). [12].

Var. d. *flaccidifolius* (P. J. Muell.). 1 v.-c. (24). Named by Dr. Focke for Rev. E. F. Linton. Apparently somewhat allied to *R. foliosus.*

Var. e. *rubiginosus* (P. J. Muell.). 3 v.-c. (3, 36, 49). [15]. A very handsome plant, as it grows in Bickleigh Vale, S. Devon, with stronger prickles than are usual in the *hirtus* group, sepals loosely reflexed after flowering, and the stalked glands on the panicle nearly all short,—"characters uncommon among the true *Glandulosi*," as Dr. Focke has pointed out.

R. TERETICAULIS P. J. Muell. *Journ. Bot.* 1893, 7. 1 v.-c. (27).

R. OCHRODERMIS A. Ley, *Journ. Bot.* 1893, 15, 46; *B. E. C. Rep.* 1893, 412. 3 v.-c. (6, 36, 43). [16].

R. BRITANNICUS Rogers, *Journ. Bot.* 1894, 49 (for this and the next). 2 v.-c. (17, 88).

R. VELATUS Lefvr. 2 v.-c. (35, 36).

R. DUMETORUM W. & N. *Journ. Bot.* 1893, 9. 59 v.-c. (1–18, 20–24, 26–30, 32, 34–40, 43, 45, 47, 49–52, 55–60, 62–65, 69, 70, 86, 88, 89, 106). I. Including and *mainly* consisting of the following forms.

a. *ferox* Weihe. No. in Set, 49. 17 v.-c. (4, 6, 9–11, 14, 15, 17, 18, 27, 36, 38, 39, 52, 57, 62, 64).

b. *diversifolius* (Lindl.). 51 v.-c. (All given above for *R. dumetorum*, *except* 15, 27, 28, 45, 56, 70, 88, 89). I.

c. *pilosus* W. & N. 4 v.-c. (2, 32, 35, 38).

d. *rubriflorus* Purchas, *Journ. Bot.* 1894, 139, 187. 1 v.-c. (57).

e. *tuberculatus* Bab.; "*R. scabrosus* P. J. Muell." *Lond. Cat.* ed. 8. 33 v.-c. (3–11, 13, 17, 23, 26–29, 32, 34–38, 40, 45, 55, 57, 62–64, 70, 86, 88, 89). I fear that at least two or three forms are combined here. Dr. Focke thinks that Mueller's *scabrosus* is probably *R. cæsius* × *radula.* So the original name *tuberculatus* is here restored.

f. *concinnus* Warren, *Journ. Bot.* 1870. 4 v.-c. (36, 55, 57, 62).

g. *fasciculatus* (P. J. Muell.). As var. of *R. corylifolius* Sm. in *Lond. Cat.* ed. 8; in *Journ. Bot.* 1893, 41; and in No. 50 of Set. 21 v.-c. (6, 10, 13, 23, 26, 28, 29, 31, 36–40, 43, 50, 55, 57, 62, 64, 89, 100). I. [22, 35, 63]. Here again, as in the case of *tuberculatus*, there has been, I believe, a mixture of different plants. But what I suppose to be the type (represented by No. 50 of Set) is best placed under *R. dumetorum*.

R. CORYLIFOLIUS Sm. 74 v.-c. (2–15, 17, 18, 20-41, 43, 45, 46, 49–52, 55–59, 62–66, 69–71, 73, 74, 76, 86, 88, 89, 91, 92, 94, 96, 100, 104, 106, 107, 109, 110). In an aggregate sense, as given here, perhaps not absent from any county.

a. *sublustris* (Lees). 52 v.-c. (2–15, 17, 20–23, 25–30, 32–38, 40, 45, 51, 52, 55, 57, 58, 62, 64, 65, 69, 71, 73, 74, 88, 89, 91, 92, 94, 104). I.

b. *cyclophyllus* Lindeb.; *conjungens* Bab. *Lond. Cat.* ed. 8. 42 v.-c. (2, 4, 6–10, 12, 13, 15, 17, 18, 21–23, 26, 29, 30, 32, 34–38, 40, 45, 46, 49, 52, 56–59, 62, 64, 74, 76, 86, 89, 91, 92, 100). I. Prof. Babington told me in 1892 that he thought his name *coniungens* would have to give place to Lindeberg's *cyclophyllus*, and this opinion has lately been expressed independently by Mr. Gelert, of Copenhagen.

R. BALFOURIANUS Blox. No. in Set, 75. 38 v.-c. (2–9, 11, 15–17, 20–24, 26, 30, 32–38, 40, 42, 52, 54, 57, 58, 62–64, 69, 81, 89). I. The Danish *R. ciliatus* Lindeb., beautiful specimens of which I have received from Mr. Gelert and from Dr. Elmqvist, seems to me practically identical with our plant. Both those botanists give as synonyms on their labels *R. divergens* Neum. and *R. Balfourianus* Aresch., *Some Observations*, p. 60.

R. CÆSIUS L. 62 v.-c. (2–12, 14–18, 21–29, 31–42, 46, 48–55, 57–60, 62–66, 69, 70, 74, 80, 86, 91, 109). I. I have enumerated all the vice-counties for which I have records; but anything like an exhaustive search would no doubt yield a higher number than even the 68 of *Lond. Cat.* ed. 8.

I still think the following "varieties" ill-defined and most unsatisfactory. For their synonymy, &c., see *Journ. Bot.* 1886, 236; 1893, 42; and *Eng. Bot.* 3rd ed. Suppl. 122–124:—

a. *aquaticus* W. & N. 9 v.-c. (2, 3, 14, 17, 23, 36, 38, 52, 57).

b. *tenuis* Bell-Salt. 12 v.-c. (7, 9, 10, 12, 15, 17, 31, 36, 38, 57–59). [16].

c. *arvensis* Wallr. 13 v.-c. (2, 3, 6, 10, 21, 23, 34–36, 38, 57, 66, 80).

d. *intermedius* Bab. 5 v.-c. (23, 34–36, 38). [14].

e. *hispidus* W. &. N. 2 v.-c. (6, 36). [49].

R. PSEUDO-IDÆUS (Lej.) is evidently *R. caesius* × *idaeus*, and is therefore omitted.

R. SAXATILIS L. 67 v.-c. (2–4, 6, 33–35, 37, 39–43, 48–50, 54, 57, 59, 60, 62–77, 79–81, 83, 85–112). I.

R. CHAMÆMORUS L. 36 v.-c. (47, 48, 51, 57, 59, 60, 63–70, 77–80, 83, 86–94, 96–98, 105–109). I.

Other species and varieties occurring in the *Lond. Cat.* ed. 8 list, but not referred to in the foregoing notes, have been omitted deliberately, either as being doubtfully British, or because their present position and relation to allied forms seem too uncertain.

Owing to the unexpected delay in the publication of *Lond. Cat.*, ed. 9, I have had an opportunity of revising the Rubi list which it contains some months after the greater part of this paper was written. The list having thus been brought more nearly up to date than it was possible for me to make these notes before the end of last year, I here insert such additions and corrections to the comital numbers given above as are necessary to make them correspond with the list in the *Catalogue*:—

R. plicatus W. & N. Add vice-county 103.
R. Rogersii Linton. Add 88 and 106.
R. integribasis P. J. Muell.? Add 58.
R. rhamnifolius W. & N. Erase 97.
R. nemoralis var. *Silurum* A. Ley. Erase 6.
R. Lindebergii P. J. Muell. Add 63.
R. mercicus var. *bracteatus* Bagnall. Add 59.
R. villicaulis (sp. collect.). Add 67, and make the total No. for var. *Selmeri* 47.
**R. villicaulis* Koehl. Add 3.
Var. c. *insularis* (F. Aresch.). Add 6.
R. gratus Focke. Add 56.
R. argentatus var. *robustus*. Alter "9 v.-c. (4–17," &c.) to 4 v.-c. (9, 17, 23, 49).
R. rusticanus Merc. Add 56.

At p. 48, instead of "*R. erythrinus* Genev. No. in Set, *58*," read "*R. erythrinus* Genev. No. in Set, *6*."

TWO HYBRID EPILOBIA NEW TO BRITAIN.

By the Rev. E. S. Marshall, M.A., F.L.S.

1. E. ALSINEFOLIUM × OBSCURUM. Among a number of willow-herbs recently sent to me for examination by Mr. R. Kidston, of Stirling, there was one collected beside the Burn of Sorrow, Clackmannanshire, which is evidently an offspring of these two species, and fairly intermediate between them. It is a combination which I have long expected to occur with us, and have carefully searched for, without success, as I never came across *E. alsinefolium* and *E. obscurum* growing together. Wherever this happens, the hybrid will probably be met with. Mr. Kidston also sent specimens of *E. anagallidifolium* × *obscurum* from Stirlingshire; it had previously been found only in my W. Sutherland Station, near the foot of Ben More of Assynt, and has not yet been obtained on the Continent.

E. alsinefolium × *obscurum* was first published (*fide* Haussknecht, *Monographie*, p. 169) by Lamotte in 1877, as having been found on the borders of rivulets in the valley of Chaudefour, M. Dore, department of Puy-de-Dôme. Prof. Haussknecht has also seen specimens from Superbagnières de Luchon and other Pyrenean localities, from Pico de Canellas, and from the Sierra Nevada, where Boissier collected it so long ago as 1837. Those who are sceptical on the question of hybridity may adopt Haussknecht's synonym, *E. rivulicolum;* but I take this opportunity of protesting against the custom of encumbering our botanical literature with a number of unnecessary names for plants which are classed as hybrids on good grounds. To say nothing of the patent absurdity of giving quasi-specific rank to forms which are not put forward as true species, the great variability of hybrids renders the adoption of any given "type" almost an impossibility. I must own to having been an offender in the past, by giving such names to *E. hirsutum* × *lanceolatum* and *E. hirsutum* × *obscurum*, and much regret having done so. On the other hand, when a plant has been described in good faith as a species, and afterwards turned out to be a hybrid (e.g. *Juncus diffusus* Hoppe), the specific name may well be retained as a synonym, in brackets.

2. E. LANCEOLATUM × ROSEUM. On May 23rd, 1894, Capt. Wolley Dod showed me *E. lanceolatum*, *E. roseum*, and three or four other species growing in some plenty on waste ground in Woolwich Arsenal. I was able, even thus early in the season, to name several hybrids with tolerable confidence, and time has shown my opinion to be correct. Among them were two specimens which I thought would prove to be as above. One of these I carefully dug up and grew on at home; my friend failed to find the other again, and it may have been accidentally destroyed by the ground being disturbed. My plant flourished, and I have no doubt that it is what I had provisionally called it. The general facies approaches *E. lanceolatum*, and the stigmas were almost as distinctly 4-cleft as in that species. Both parents have their flowers white in bud, changing to pink, and in this the hybrid resembled them. The petioles are longer than in *E. lanceolatum*, especially about half-way up the stem; in this respect, as well as in their shape, texture, and toothing, they clearly show a *roseum*-origin, which is also indicated by the somewhat faintly 4-lined stem and the very hoary capsules. These are somewhat shrunken; but I was leaving home for a month when the plant was gathered (June 15th), and could not allow them to develop as far as was desirable.

This particular hybrid is not likely to be often met with in England. Devon and Cornwall, the head-quarters of *E. lanceolatum*, produce *E. roseum* very rarely, and it hardly seems to be native in either county; also, while the latter is most at home on damp ground or by streams, the former is usually a xerophilous plant, loving hedgebanks, quarries, and open ground in light, sandy soils. I have never observed the two together in my own West Surrey neighbourhood, although both are locally abundant. The only localities for *lanceolatum* × *roseum* given by Haussknecht (*l. c.* p. 95) are Holthausen and the Kassenberg, near Mülheim-on-the-Ruhr; his specimens are described as approaching *E. roseum* in habit, whereas mine takes more after *E. lanceolatum*.

This combination has, however, also occurred spontaneously for the last two or three seasons between the cultivated parents in my garden at Milford, in forms evidently nearer to *roseum*. And here I may remark that I have collected various plants from this garden, which I can only refer to a hybrid origin. All the species concerned were deliberately introduced by myself, over four years ago, with the exception of *E. montanum*, which I found well established, and *E. obscurum*, which grows close by. As the late editor of the Supplement to *English Botany*, ed. 3, has expressed a strong opinion against the occurrence of such natural "crosses," I think it desirable to give a list of the hybrids which I consider to have spontaneously arisen there, under my own observation, without any interference on my part beyond the planting of the various original species. By far the greater number of the seedlings, I may state in passing, come quite "true." Specimens of the plants in the list have, in most instances, been sent to S. Kensington for the British Herbarium, where students may form their own conclusions:—

E. adnatum × *Lamyi.*
,, × *palustre.*
E. Lamyi × *lanceolatum.*
E. lanceolatum × *montanum.*
E. lanceolatum × *obscurum.*
,, × *palustre.*
,, × *roseum.*
E. parviflorum × *roseum.*

Probably two or three others might be added; but I refrain from doing this, as I feel some doubt about one of the plants in these cases. The *adnatum* × *palustre* is a curious, narrow-leaved form; the only wild British specimen of this which I have seen was collected in Monmouthshire by the Rev. A. Ley. The *lanceolatum* × *palustre* is of still greater interest, as the only example hitherto known occurred in a garden at Copenhagen. It has rather long-petioled leaves, and a very glandular panicle. The two specimens of this first appeared in 1893, and quite perplexed me; owing to the plague of *Aphides*, they did not develop properly, but last summer was more propitious, and I succeeded in drying them nicely. Though they approach *E. palustre* in many respects, their affinity with *E. lanceolatum* (shape of leaves and stigmas, colour of flowers, &c.) is equally clear. The *palustre* parent was a small form from Ben More of Assynt, which I have apparently lost. In these garden hybrids the capsules are uniformly slender and shrunken, as compared with the true species.

NEW SOUTH AMERICAN SPECIES OF POLYGALA.

By Alfred W. Bennett, M.A., F.L.S.

In a parcel of *Polygalaceæ*, chiefly from the Argentine Republic, sent me by Prof. F. Kurtz, of Cordoba, I find the following new species of *Polygala*. The sections of the genus referred to are those adopted by me in my monograph of the Brazilian *Polygalaceæ* in Martius's *Flora Brasiliensis*.

Section A.

Polygala guatemalensis, sp. n. Suffrutex erectus, cir. 6-poll., radice longa, tenui; ramis paucis, virgatis, pubescentibus; foliis tenuibus, lanceolatis, ciliatis; pedicellis hirsutis; racemo terminali, paucifloro; floribus sat grandibus; sepalis exterioribus ovatis, hirsutis, ciliatis, discretis; alis 3–4-plo longioribus, 2–2½ lin. longis, obovatis, glabris, maculatis; corolla ecristata; androphoro longissimo; bracteis parvis, hirsutis, persistentibus; capsula obcordata, hirsuta; seminibus (immaturis) parvis, glabris, strophiolo carnoso indutis.

Kurtz, No. 298. Bushy places, Coban, 4400 ft. Resembles *P. pedicellaris* in appearance, but differs in the strophiolate seeds and other characters.

Section A.

Polygala Chodatiana, sp. n. Suffrutex lignosus, spinosus; ramis spinescentibus, denique aphyllis, junioribus pubescentibus; foliis parvis, lineari-ellipticis, 1–1½ lin. longis, hirsutis, deciduis; pedicellis brevibus, hirsutis; bracteis parvis, ovatis, ciliatis; sepalis exterioribus ovatis, hirsutis, ciliatis; alis 3-plo longioribus, albis, tenuibus, glabris, ad dorsum leviter hirsutis; ovario obovato; stylo curvato, superne incrassato; stigmate bilobato; corolla lutea, ecristata, galeata, 3-lobata. Fructus ignotus.

Kurtz, No. 5424. Rocky places, province of Mendoza; Las Peñas, Sierra del Tunuyan. Closely resembles *P. spinescens* in appearance and general habit, but belongs to a totally different section of the genus, as is shown by the ecristate corolla. Named after Professor Chodat, of Geneva, author of the *Monographia Polygalacearum*.

Section D.

Polygala cordobensis, sp. n. Suffrutex procumbens; caulibus numerosis, molliter pubescentibus; foliis linearibus, confertis, 3–4 lin. longis, tomentosis; racemis terminalibus, brevibus, capitatis; bracteis ovatis, subglabris, persistentibus; pedicellis brevibus, glabris; sepalis exterioribus parvis, glabris; alis duplo longioribus, ovatis, glabris, mucronatis; ovario subgloboso, sessili; carina pulchre fimbriata; seminibus nigris, glabris, verrucosis, estrophiolatis, appendicibus duabus indutis, semen equantibus.

Kurtz, No. 6737. Roadsides between Cèrro Pertigo and Cèrro Molleyaco, Cordoba; flor. Jan. A distinct species, allied to *P. Neæi*, but much more tomentose.

Section D.

Polygala grisea, sp. n. Herba procumbens; caulibus virgatis, pubescentibus; foliis sparsis, distantibus, linearibus, 1½–2 lin. longis, supernis quandoque oppositis, pilis longis albis indutis; rachide hirsutissima; racemis brevibus, terminalibus; bracteis parvis, ovatis, membranaceis, persistentibus; pedicellis brevibus, glabris; sepalis exterioribus parvis, membranaceis, glabris; alis 2–2½-plo longioribus, ellipticis, glabris; corollæ crista fimbriata; ovario subgloboso, sessili, emarginato; seminibus hirsutis, estrophiolatis, appendicibus duabus angustis indutis, semine dimidio brevioribus.

Kurtz, No. 3645; "10 leguas al Sur de Mendoza en la catena de la Cordillera"; flor. Nov. Allied to the last, but differing in several well-marked characters.

Section G.

Polygala Kurtzii, sp. n. Suffrutex erectus; radice lignosa; caulibus numerosis, ramosis, 6–10 poll. longis, leviter pubescentibus; racemis terminalibus, sat paucifloris; foliis confertis, anguste ellipticis vel obovatis, 3–4 lin. longis, 1 lin. latis, utrinque maculatis, sessilibus, levissime ciliatis; pedicellis brevissimis, glabris; bracteis parvis, ovatis, glabris; sepalis exterioribus glabris; alis grandibus, ovatis, cœruleis; corolla variegata, albo-lutea, crista grandi multifida ornata; ovario subgloboso, pulchre crenulato; seminibus nigris, leviter hirsutis, hemisphæricis, leviter rostratis, appendicibus duabus longis indutis, semen æquantibus.

Kurtz, No. 5963. Valle del Yeso, Cordillera de Malál-hué, Mendoza; flor. Jan. The crenulate ovary is a distinguishing character of this pretty species, which I venture to name after the distinguished collector.

ALCHEMILLA VULGARIS AND ITS SEGREGATES.

By Edward F. Linton, M.A.

During last year a good representation of British forms of *Alchemilla vulgaris* L., consisting of over fifty sheets from various parts of England and Scotland, were submitted to M. Buser, of Geneva. It was thought unnecessary to send more than a few examples of *A. alpina* L., since our British plant shows so small a range of variation. M. Buser was surprised at the brevity of our list, compared with the numerous forms which are found in Scandinavia, more of which he suspects are hidden away among our northern hilly districts; and he remarks, in contrast, on the fertility of Mont Salève, near Geneva, which produces no less than twenty-four species, including *alpina* forms.

Our *A. vulgaris* aggregate, as illustrated by the series of specimens above mentioned, is separated by M. Buser into the three forms with which British botanists have come to be familiar, viz., *A. vulgaris* L., in a restricted sense, which is probably our commonest species; *A. alpestris* Schmidt, which has been also named *A. vulgaris* L. var. *glabra* auct. plur., non DC., a subglabrous variety which abounds in many mountain regions; and *A. filicaulis* Buser, to which belong most of the specimens which are usually labelled "var. *montana* Willd." M. Buser regards each of these three as species. *A. montana* Willd. we cannot lay any claim to as British.

As the distribution of these three species, or varieties as some would regard them, will need to be worked out afresh, I give here a list of the counties or vice-counties for which I have seen a specimen of each, since the arrival of M. Buser's notes and determinations; and add a few notes on the differences between the three plants.

A. vulgaris L., sensu restricto. *A. pratensis* (Schmidt). The most familiar and widely distributed of the three, a large plant when well developed, but not unfrequently dwarfed in a dry or exposed or highly elevated situation. The inflorescence is glabrous; the leaves are hairy beneath, glabrous above, the lobes usually rounded but variable, the petioles and stems more or less hairy, not unfrequently villous. The distribution is as follows, so far as I know it; the numbers being those of Watson's *Topographical Botany*:—3, 4, 5, 35, 42, 44, 57, 58, 59, 62, 63, 64, 69, 70, 72, 73, 83, 88, 89, 92, 99, 111. It is obvious that this account of the distribution is most imperfect; the type probably occurs in all the counties for which the aggregate has been recorded.

A. ALPESTRIS Schmidt. *A. vulgaris* L. var. *glabra* Mert. & Koch, 1823; Lejeune, 1824; Wimm. & Grab., 1827, &c., non DC., 1805. Here is Schmidt's original description, with which the Editor of this Journal has kindly furnished me:—"Caulis diffusus, tener, dichotomus, subglaber. Folia semiorbicularia, utrinque glabra, lobis rotundis, acute dentatis. Flores conglobati, subumbellati. Habitat in subalpinis montibus, locis petrosis apricis" (Schmidt, *Fl. Boëmica*, i. Cent. 3, p. 88, 1794). *A. alpestris* may readily be distinguished from our other two forms by having the stems and petioles glabrous or nearly so, leaves glabrous except for a thin pubescence on the principal nerves beneath, and a conspicuous silky ciliation near the tips of the acute teeth; inflorescence glabrous; plant usually large, but varying with situation. This is an occupant of mountain districts, growing on rocks and wet hill-sides. Specimens have come under my notice from the following:—14, 46, 48, 49, 58, 62, 64, 67 or 68, 69, 72, 74, 77, 86, 88, 92, 96, 97, 99, 103.

No doubt this will be found to occur in many additional N. of England and Scottish counties. It would be desirable if the Sussex (14) locality could be verified afresh; I do not know of any other instance from the S. of England. The specimen which is undoubted *A. alpestris* is in Borrer's herbarium at Kew, and the label gives "Hendle Wood, Maresfield," as the locality. If it is a Sussex plant, it should still more be expected to occur in Devon or Somerset.

A. FILICAULIS Buser (*Bull. de l'Herb. Boissier*, i. App. 2, p. 22, 1893). *A. vulgaris* L. var. *montana* auct. brit., non Willd. The following account, drawn from a study of specimens and M. Buser's description, will be sufficient to distinguish *A. filicaulis* from the two previous forms. The plant is usually small or of medium size, somewhat glaucous; stems 3–12 in., slender, thinly hairy; leaves plane, rather small, thinly hairy on both surfaces and on the nerves beneath, petioles more or less hairy; panicle rather few-flowered and little-branched; calyx comparatively large, sometimes glabrous, usually (in British specimens always?) clothed with long hairs, lobes large triangular-ovate acute. The nut appeared to me more acute than in the other two, but M. Buser does not mention this feature. *A. filicaulis* affects drier situations, poor pastures, and hill-sides where there is not much depth of soil; sometimes growing with one or other of the two previous forms, often taking their place altogether. Though it has been supposed to be a rather uncommon form in Britain, compared with the type, its distribution is already known to be considerable, and I have seen specimens from the following counties or vice-counties:—3, 4, 5, 6, 8, 9, 21, 26, 30, 32, 35, 36, 37, 38, 39, 40, 42, 51, 53, 57, 72, 80, 88, 89. I have also seen specimens from Teesdale (in Hb. R. P. Murray) and from Ingleton (in Hb. Borrer), but in neither case was the county determinable.

Of the distribution of the three forms in Ireland I have scarcely any particulars as yet.

My notes of the altitude at which these forms are found are very imperfect. *A. vulgaris* is stated by Mr. P. Ewing, in the *Trans. Nat. Hist. Soc. of Glasgow*, to occur from sea-level to 2000 ft.; I have it from 2600 ft., and suspect it goes higher. Sir J. D. Hooker (*Student's Flora*) gives 3600 ft. as the greatest altitude for the aggregate; possibly *A. alpestris* Schmidt is the one that reaches this elevation, but it also descends to such lower levels as "Meadows, Dalmuir, Dumbartonshire, *Mr. L. Watt*," and to meadows by Annan Water, a little above Moffat; the latter spot being under 400 ft. *A. filicaulis* Mr. P. Ewing speaks of, under the name of *A. montana* Willd. (*l. c.*), as occurring "from the sea-shore up to a high elevation on our mountains"; I have seen it at about 2000 ft. or a trifle higher in Mid-Perth, on the slopes of Craig Magrianich, and nearly at the same elevation on White Coomb, Dumfriesshire, but have traced it no higher.

I take the opportunity of acknowledging the great obligation we are under to M. Buser for clearing up the long outstanding uncertainty that hung about the British forms of *A. vulgaris* L.

BIBLIOGRAPHICAL NOTES.

IX.—Curtis's 'Flora Londinensis.'

In this Journal for 1881, p. 309, there is an interesting summary of the result of Mr. R. A. Pryor's investigations made with a view to discover the order in which the plates of this great work were originally issued, but it leaves us with a desire for further information. Acting upon the hints contained in this summary, I have endeavoured to pursue the inquiry, but without much success. The following particulars may, however, be worth recording.

The *Flora*, as is well known, contains six fasciculi, sometimes bound in two volumes, but often in three. Each fasciculus contains seventy-two plates, and these were originally issued in parts or "Nos.," as they were called, each No. containing six plates, making a total of 432 plates; but neither the parts nor the plates were dated, nor were the plates numbered until we reach 101 (*Agaricus ovatus*).

As the plates were subsequently bound up and indexed in the

Linnean order (though not so issued in the first instance), we should have no clue to their original order, but for the fact that Stokes, in the second edition of Withering's *Botanical Arrangement* (1787), refers to the plates by the parts or "Nos." containing them. By the aid of these references I have been able to arrange the plates in groups of six each, in their original order. Plate 101, above referred to, comes, as we should expect, in part 17, and this is Stokes's reference. Part 1 contained *Anagallis arvensis* ("tab. 1," Sibthorp, *Fl. Oxon.*), *Butomus umbellatus*, *Hypericum pulchrum*, *Solanum Dulcamara*, *Lonicera Periclymenum*, and *Asplenium Scolopendrium* (all bearing the reference "i. 1" in Withering).

The "MS. of Pulteney," from which the date, May, 1775, of the first No. is derived is, I believe, to be found in a copy of the first edition of Hudson's *Fl. Anglica* in the library of the Linnean Society. The first fasciculus was complete when Lightfoot's *Fl. Scotica* was published, July 24th, 1777, and the second, third, and fourth fasciculi seem to have appeared at about the same rate, though the materials for fixing dates are very scanty. Hudson's *Fl. Anglica*, ed. 2 (1778), is first quoted under pl. 115 (*Lamium album*) in No. 20. No. 32 in fasc. iii. must have been published after October, 1780 (see pl. 190, *Hydnum auriscalpium*); No. 39 in fasc. iv. at the end of 1781 (see pl. 235, *Phallus caninus*). *Carex riparia* (pl. 281 in No. 47) may be dated 1783 without much risk of error. It appears also in Curtis's "Catalogue of British Plants cultivated in the London Botanic Garden," published in the same year. *C. gracilis* (also in No. 47) is mentioned in the Settle Catalogue of Plants observed in 1782, with a reference to "Fl. Lond.," but the Catalogue may have been published later.

Fasc. v. appears to have extended from 1783 to 1788, or perhaps later. Pl. 342, *Sparganium ramosum*, is in No. 58, the last No. quoted by Stokes, so it may be dated 1786, after August (see letterpress), or more probably 1787. The numbering of the plates, which is somewhat irregular—some numbers occurring two or even three times, and some being omitted—ends with pl. 348 (*Chrysanthemum Leucanthemum*) in No. 59.

In fasc. vi., the plates not being numbered, and Stokes's references now failing us, we are rather at sea; but some of the plates are dated, viz., *Lathyrus sylvestris*, *Ornithopus perpusillus*, *Urtica dioica*, and *U. urens*, "Jan. 1, 1791"; *Geranium dissectum*, "Mar. 1, 1791"; and *Festuca elatior* and *F. loliacea*, "Dec. 1, 1791." *Ophrys fucifera* appears to have been published "June 1, 1794" (see letterpress), and *Antirrhinum* (*Peloria*) in the same year. Twenty-eight more of the plates in this fasciculus are referred to in Sibthorp's *Fl. Oxon.* (1794), and twelve more (including *Cerastium pumilum*) in With. *Bot. Arr.* ed. 3 (1796). This leaves twenty-two more (including *Cerastium tetrandrum*) to complete the fasciculus, and in one of these, *Lobelia urens*, Curtis refers to "October 18, 1796" as "two years since." Both vols. ii. and iii. have the date 1798 on the title-page. *Carex ventricosa* (*depauperata*) in this fasciculus is referred to in Goodenough's paper in *Linn. Trans.*, read April 3rd, 1792, but the plant first appears (as *C. depauperata*) in Curtis's Catalogue of 1783.

From the above dates it appears probable that there was a considerable interval between the completion of fasc. v. and the commencement of fasc. vi.

In Hooker's *Botanical Miscellany*, vol. i. p. 82, footnote, there is a reference to a "new edition of the old series [of *Fl. Londinensis*], now completed in three volumes, with 432 plates." I have not met with this. Was it anything more than a reprint?

W. A. Clarke.

HIERACIUM MURORUM VAR. PACHYPHYLLUM, N. VAR.

By the Rev. W. H. Purchas, M.A.

The plant which I here attempt to describe has been known to me for many years as an inhabitant of the carboniferous limestone rocks on both the Herefordshire and Gloucestershire sides of the Wye Valley between Ross and Monmouth, and I have always been struck by its difference from the more common green form of *H. murorum* and others of the genus with which it grows in company. When I submitted it to the late Mr. James Backhouse, soon after the publication of his monograph, he named it *H. cæsium*, the name by which I and my friend the Rev. A. Ley continued to know it, and by which we designated it in the *Flora of Herefordshire*. Of course it has been latterly seen that the *H. cæsium* of Fries is quite a different thing from the plant under notice, and since this Herefordshire and Gloucestershire plant could not be identified with any recognised British form, I have been in hopes that Mr. F. J. Hanbury would undertake to describe and name it; he has, however, until lately preferred to place it unnamed under aggregate *H. murorum*, rather than risk the introduction of a needless name. When, however, Dr. Elfstrand saw this plant last year in Mr. Hanbury's collection, he decided that it was an unnamed form, and Mr. Hanbury proposed the name which I have here adopted.

Glaucous or cæsious; leaves nearly all radical, oblong-ovate or broadly oblong, the earlier ones very blunt, almost retuse, later ones more acute, all mucronate at the tip, cordate or hastate at the base with one or more patent or descending teeth, nearly entire upwards, but with a small mucro at the termination of each vein, glaucous or cæsious above, and glabrous; in exposure thick and with a smooth waxy surface; underneath and on the margins clothed with curled white bulbous-based hairs, and deeply stained with purple, and with a deep purple marginal line. Petioles shaggy with curled hairs. Stem erect, rather thick, branched from about or generally from above the middle, often purplish below, and with scattered fine white hairs near the base; the intermediate portion with prominent yellowish lines. Stem-leaves usually none; if present, one only, petiolate and placed low, sometimes very narrow and pointed, or scarcely more than a bract at the origin of the first branch. Peduncles long, ascending from a more or less arcuate base, the upper ones, especially in vigorous or cultivated plants, straight and somewhat umbellate, densely floccose and setose, especially in their upper part. Heads numerous, 3–8 or even 10, broad and blunt in bud; outer phyllaries lax, short and broad; middle longer, blunt, and with lighter margins; inner paler, narrower, and more acute; all woolly at the tip, and with densely floccose margins; all with many yellow-headed setæ, which afterwards become darker, and black-based hairs with fine white tips. In the unopened heads the phyllaries are closely folded over the florets, their floccose margins showing as a white star. Ligules of a full deep yellow, clothed externally on their lower part with longish slender hairs; outer ones long, so that the fully expanded head measures 1½ in. or more across. Styles yellow or more or less dusky.

On the carboniferous limestone rocks of the Wye Valley, between Ross and Monmouth, both on the Gloucestershire and Herefordshire sides of the valley. Flowering early in June, somewhat in advance of the green form of *H. murorum*, which grows in the same localities, and not so tall as the latter.

Mr. Hanbury has kindly sent for comparison Irish specimens gathered June, 1890, by Mr. S. A. Stewart on basaltic cliffs at Knockagh and at Sellagh Braes, Co. Antrim; these, especially the former, seem the same as the Wye Valley plant, save that the phyllaries are more attenuate and less setose and tomentose than in that. Others from Cave Hill, Belfast, are much more doubtful, and can hardly, I think, be placed to *H. pachyphyllum*. Specimens from the Great Orme's Head seem to me still more different. I may add that after several years' cultivation I find the new variety preserves its distinctness from other forms, and reproduces itself freely from seed. I have to thank Mr. Hanbury and also Miss Thompson for much kind help.

FRIEDRICH SCHMITZ.

By the early death of Professor Schmitz at Greifswald on January 28th, science has lost an indefatigable worker, who during his brief career contributed to our algological knowledge the most valuable additions of recent years. Born in 1850 at Saarbrücken, he was educated at the gymnasium there, proceeding to the University of Bonn, where he devoted himself to biology. His studies were interrupted by the outbreak of the Franco-Prussian war, during the whole of which he was on active service, and was present at the capitulation of Paris. It was during the war, when he was quartered on the coast of Normandy, that he first collected specimens of algæ—the sight of a common soldier engaged in such a pursuit causing, as he used to relate, much surprise. After the close of hostilities he returned to Bonn, where he took his degree; thence he went to Halle as assistant to the renowned de Bary, and when his chief was transferred to Strasburg Dr. Schmitz went with him and remained until 1874, when he returned to Halle as assistant Professor. He went from there in 1878 to Bonn as Extraordinary Professor of the University; here he remained till 1884, when he was appointed Professor of Botany and Director of the Botanical Gardens in the University of Greifswald, one of the most ancient seats of learning in Prussia.

The scientific work of Professor Schmitz was characterized by the exactitude with which every point was worked out before it was published, and it is perhaps a subject for regret that, owing to this rule of his to leave no detail unsolved, the work on which he was engaged—the revision of the *Florideæ*—up to his death was not ready for publication. His first important contribution to phycology, on "*Halosphæra*, a new genus of green algæ," appeared in 1878, but he had previously published some dozen original papers on botanical subjects. From that time up to his death his publications on the reproductive organs and vegetative growth of the seaweeds were numerous, but all of them of the greatest interest and importance, those of perhaps the highest value being on the cell-structure of the *Siphonocladiaceæ*, on the zoosporangia of *Halimeda*, on *Phyllosiphon*, and on *Lophothalia*. His two papers, published in 1883, on the chromatophores of seaweeds and the reproduction of the *Florideæ*, have both been regarded as of the highest authority for specialists on these difficult subjects, and it is of interest to note that at a recent meeting of the Linnean Society Mr. Brebner showed some drawings of the reproductive organs of some species of *Florideæ* which he had made from a series of preparations, and all of which were confirmatory of the drawings published by Professor Schmitz more than ten years ago.

Professor Schmitz's collecting was done chiefly at the zoological station at Naples and during a visit to Greece, and much of his material was obtained from that source. His skill in examining algæ was exceptional, and though he spurned the use of the new-fangled mechanical contrivances, many of his descriptions were the result of his careful sections of very scanty material. On two occasions he visited England, in the summer of 1889 and again in 1892, when he was present at the Edinburgh meeting of the British Association, and visited the marine biological station on the Clyde at Millport.

I had the privilege of studying in the research laboratory at Greifswald under Professor Schmitz and his assistant, Dr. Paul Hauptfleisch, and the considerate kindness with which, even in the stress of work, he was wont to devote himself to instructing and helping the workers in his laboratory, and the patience with which he would explain his investigations even to me, whose imperfect knowledge of German made the task more tedious, will always be a grateful memory. His extraordinary devotion to his life's work, with hardly sufficient time left for sleep, was an example which influenced those around him, and the rare hours of leisure and relaxation in his family circle which he allowed himself were keenly enjoyed. It is with a melancholy pleasure that I record these impressions of a man whose personality was of a striking character, and into whose comparatively short life such a large amount of important work was crowded.

J. B. Carruthers.

SHORT NOTES.

Montgomeryshire Records. — During 1893 and 1894 I have received specimens from my correspondent, Miss E. Jones, of Montgomery, of three species not hitherto recorded for the county:—*Ægopodium Podagraria.* Lane leading to Lymore Hall.—*Sambucus Ebulus.* Hilly wood at the south end of the town. — *Hyoscyamus niger.* Above the town reservoir. All these localities are unquestionably within the county.—William Whitwell.

Impatiens Noli-me-tangere in Montgomery and Salop. — In Turner and Dillwyn's *Botanist's Guide* (1805) no Shropshire record for this plant is given, but the following appears under the head of Montgomeryshire:—"Within a mile from Montgomery, at Gwern Dhee, *Merrett.* Banks of the river Camlet, at Morrington, in the parish of Chirbury, about five miles from Montgomery, *Bingley.*" This is copied *verbatim* in Watson's *New Botanist's Guide* (1835), and no other localities are named. In the first edition of *Topographical Botany* (1874) the record stands:—"47, Montgomery: Merrett, Bingley, quoted in B. G." In the second edition this is omitted, and neither Shropshire nor Montgomeryshire is named for the species. Leighton's *Flora of Shropshire* has no mention of *Impatiens.* In Herb. Brit. Mus. I have found a specimen of the plant labelled "Herb. Banks. Near Bishop's Castle, Montgomeryshire," and another "Acton Burnell, Salop: W. E. Beckwith, Aug. 1881." This is recorded in *Journ. Bot.* 1881, p. 51, where Mr. Beckwith notes:—"Mr. R. M. Sergeantson has brought me several specimens of this plant, which grows apparently wild near Acton Burnell."

The *Impatiens* still grows in good quantity in Marrington Dingle, in the parish of Chirbury, evidently the "Morrington" of Turner and Dillwyn—a ravine of great beauty through which the river Camlad runs. Miss E. Jones sent me specimens thence in 1893 and 1894. But the locality is in Shropshire; the county boundary passes just south of the Dingle, which lies in a projecting lobe of Shropshire, entered at less than two miles from Montgomery in a direct line, and again left for a similar lobe of Montgomeryshire soon after the Dingle has been crossed. The case is one which well illustrates the absurdity of dealing with botanical distribution according to artificial county limits.

Turner and Dillwyn's record must thus stand as the first for Shropshire. Mr. Beckwith's is also an undoubted one for that county. As to the Banksian specimen, Bishop's Castle is itself in Shropshire, and the very nearest point of Montgomeryshire is two miles distant. I am inclined to think that this specimen also, which is undated, may be from Marrington Dingle, that locality being only six miles from Bishop's Castle as against four from

Montgomery. Only "Gwern Dhee," then, is left as a possible Montgomeryshire habitat for the plant. This, if only one mile from Montgomery, must be within the county limits. But the place cannot be identified at present. "Gorondu" and "Gorondu Mill" are marked on the ordnance map, but these are 2½ miles distant from the town. I hope that Miss Jones will soon be able to find the exact locality intended, and perhaps rediscover the plant there. At present no Montgomeryshire record can be considered satisfactory.—William Whitwell.

NOTICES OF BOOKS.

A Monograph of the Mycetozoa, being a descriptive Catalogue of the Species in the Herbarium of the British Museum. By Arthur Lister, F.L.S. 8vo, pp. 218; 78 plates, 51 woodcuts. Price 15s.

The group of organisms forming the subject of this admirable memoir has almost universal distribution, and the interest attaching to their study is as wide as the civilized world. Insignificant as they are in size, useless as from any economic standpoint they may seem to be, slime-moulds are nevertheless to-day among the most curious and wonderful objects that fall to the hands of botanist or biologist. Whether we consider the intrinsic beauty of the tiny objects themselves, whether their most peculiar habit and life-history, or whether we reflect upon the doubtful position they must occupy in any scheme of classification we are likely to devise, from any and every purely scientific standpoint the "Myxos" possess a fascination all their own.

The slime-moulds are microscopic objects, and ever since the microscope attained anything like present efficiency they have been the subject of more or less exact research. Rostafinski's elegant Monograph, which appeared in 1875, was the most notable study, and has been a classic ever since. Written, unfortunately, in Polish, Rostafinski's work has been less useful for English students. Until recently Cooke's abridgement of Rostafinski has been almost the only text-book. It is therefore a matter of no small congratulation when the largest collections of material and the latest appliances in apparatus and art are brought to the exposition of this wonderful group. Mr. Lister's work, although, as indicated in the title, based upon the large collections of the British Museum, has nevertheless not been without the advantage of wider comparison. All the larger collections of Europe have lent their service, so that he has been able to study and compare in almost every case the original type. To his work Mr. Lister has also brought the skill and experience of many years' study in this his special field. As a result we have the most careful, exact, and painstaking review that the slime-moulds have yet received; while at the same time the thorough digestion of the subject, the ample generic keys, with figures and plates, make the work exceedingly valuable for the student.

The arrangement adopted is that of Rostafinski. Two things are to be attained by any classification of natural objects: one is convenience, the other is the expression of ascertained facts of relationship. Now, while it is true that no scheme of classification can express all the facts of relationship, and that convenience therefore seems to win greater consideration, still the best form of arrangement will with convenience combine the largest expression of truth. Rostafinski's arrangement is convenient, but that, even as here modified, it conveys the best impression of the real relationship of the various families and genera will, we believe, be freely questioned. Of course, adopting Rostafinski's general scheme, Mr. Lister prefers the title Mycetozoa to the more familiar Myxomycetes. If it be objected to Wallroth's name, Myxo*mycetes*, that the organisms are not fungi, it may be with equal force urged that they are not animals, and so the term Myceto*zoa* is equally at fault. If we change current usage at all, we must adopt Fries's designation, *Myxogastres*, which is non-committal as to etymology, and has priority.

When we examine further, and consider the author's disposition of families and genera, we find him very conservative. He retains, for instance, *Comatricha* as distinct from *Stemonitis*, and *Hemiarcyria*, hereafter to be known as *Hemitrichia*, as distinct from *Arcyria*. On the other hand, *Tilmadoche* is merged with *Physarum*, and *Ophiotheca* with *Perichæna*. In all this Mr. Lister will have the support of students generally. In the matter of specific determinations occur, as was to be expected, the greatest number of innovations. Not only do many old friends, on account of some prior christening, appear here under unfamiliar names, but a great many lose identity altogether, and are mentioned as synonyms only, or varieties of species thought to possess more definite and abiding characters. No doubt in many cases this is excellent. Of making many species there is no end. Nevertheless our zeal in this regard may carry us too far. Whenever a form possesses definite characters which are uniformly present, it should constitute a species. The number of such characters may vary, does vary in different cases. When too many divergent forms, even with differences comparatively slight, are crowded under one description, the tendency is not to clearness, but to confusion. A student will be led to regard any approximate resemblance as sufficient for determination. Furthermore, when it comes to grouping related forms under one or other established specific name, different authors are certain to differ as to how the groups shall rise, how be constituted. Take, for instance, *Physarum compressum* A. & S. The Physarums are no doubt a difficult set; but is there anything to be gained by grouping together four or five forms which are confessedly so distinct as to constitute varieties, and which differ so far as to require a separate description for each? Again, the amount of variation necessary to establish a species is not, cannot be a constant quantity to be measured alike for the species of all genera. A slight difference, it would appear, is sufficient to separate *Comatricha typhoides* (our old friend *C. typhina*) from *C. Persoonii*, while apparently much more striking differences, quite as constant, fail to keep *Physarum leucophæum* from blending with *Physarum* (*Tilmadoche*) *nutans*. That species vary is to be expected, but the forms with which the present volume has to do vary less than do many organisms of higher pretension. This is the experience of most students of the group. While we are considering the genus *Physarum*, we may note *Physarum polymorphum* Rost., here made, as usual among the Physarums, to cover a multitude of supposed synonyms. *Tilmadoche gyrocephala* is included, but not *Physarum polycephalum* Schw., which certainly, according to description, is the same thing; and if *T. gyrocephala* is *P. polymorphum*, then the Schweinitzian name has priority, and the consolidated species should bear the name *P. polycephalum* Schw.

The physiological part of Mr. Lister's work must not be overlooked. This is found in the preface, where we have an interesting account of his cultures and staining methods. Karyokinesis is described as characterizing the plasmodia of many species.

The plates which accompany the descriptions of the more difficult species are all from water-colour drawings, and are reproduced by photography. The water-coloured originals are fine, as the writer hereof can personally testify; but the best results by photographic methods are not obtained from tinted drawings. For collotype, zinc-etching, &c., nothing equals black on white. This is apparent in Mr. Lister's work: species whose natural colours are black and white are represented best.

The whole appearance of the work, its convenience for the purpose to which it is directed, the great amount of conscientious labour it evinces, are matters of sincerest congratulation alike to the distinguished author, to students of the subject who are everywhere to become his pupils, and to the trustees of the noble institution whose liberality presents such a volume to the scientific world.

T. H. McBride.

A Popular Treatise on the Physiology of Plants, for the use of Gardeners, &c. By Dr. Paul Sorauer. Translated by Prof. F. E. Weiss, B.Sc., F.L.S. Longmans, 1895. Pp. x, 256; 33 figs. Price 9s. net.

A large number of very worthy botanists to whom plant physiology, as commonly presented to them, has few attractions, will find in this book an introduction to the subject of a pleasant and satisfactory kind. It is designed for gardeners and students of horticulture and agriculture, but it requires an elementary knowledge of botany, chemistry, and physics, not commonly possessed by gardeners even in this enlightened time. So equipped, however, the student may read the whole book without finding a hard or dull page. It is very readable, and that is almost the same thing as saying it is unique among treatises on plant physiology. We have no wish to disparage well-known books on plant physiology, readable enough to the admirably learned; but none of them have the peculiar merit of associating ordinary gardening operations, for example, with the functions and structure of familiar plants, in the striking fashion of this excellent book. It has this farther merit of introducing students incidentally to a better understanding of pathology, and it would be a good book to read before the translation of Hartig's admirable volume recently noticed in our pages (1894, p. 380). Now that County Councils are teaching both horticulture and agriculture, such a book as this one comes at a singularly opportune time.

There is first an introductory chapter, then an account of the structure and nutrition of roots and their treatment; next the stem and the leaf are similarly described, and their treatment dealt with. Interesting chapters follow on the use of shoots for propagating, the theory of watering, the flower, fruits, and seeds. Dr. Sorauer's name is a warrant of the excellence of the original, and Prof. Weiss has given a most accurate and clearly written translation, which reads so well that we have none but minor criticisms to make of it. Is not plant physiology better than "vegetable physiology"? "Vegetable organism" sounds uncouth. The use of "function" as a verb is deplorable; laboratory slang must not encroach on literature. "Already after twelve hours" is too suggestive of the original. But it will be seen, from the character of these criticisms, how little fault is to be found with this interesting and valuable book. Readers in this country owe Prof. Weiss cordial thanks for the admirable gift of a good honest translation of this work.

G. M.

The Flora of Dorsetshire, with a sketch of the Topography, River System, and Geology of the County. By J. C. Mansel-Pleydell, B.A., F.L.S., F.G.S. 2nd ed., with two maps. Printed for private circulation only. 1895. 8vo, pp. xxxviii, 345, xxv.

Mr. Mansel-Pleydell is to be congratulated on this new edition of a book published in 1874, which has for some time been difficult of access. It is not every one who, at a period of life considerably beyond the traditional "threescore years and ten," is privileged to superintend a new edition of a book twenty years before; and we are glad to know that Mr. Mansel-Pleydell's interest in the plants of the county with which he has been so long associated is as keen as ever.

The present Flora differs in many respects from the first. The references to Babington, Syme, Gerard, &c., are omitted. The marks of certainty used so freely in the first edition after authors' names are also omitted, though it was obvious enough what was meant; *i. e.*, that the compiler had seen a Dorset specimen, not an author's type.

A few notes which suggested themselves on looking through the book may fitly form the present notice. Under the aquatic *Ranunculi* there is a slight tendency to lessen the number of species. At page 6, a note by the Rev. W. M. Rogers will interest British botanists. I may say that Mr. Watson always considered the plants sufficiently distinct, and all the fresh specimens I have seen of *R. intermedius* had pinkish petals. "This plant grows here in great abundance with *R. Lenormandii*, and with what seem intermediate forms, as I have observed near Herne Railway Station, S. Hants. The Bridgerule (Devon) plant was named *intermedius* by Prof. Babington. Hooker describes it in *Student's Flora* as having the petals pinkish and the receptacle slightly hairy. The latter character appears unreliable, and I have found the petals always white, and most variable in size, while the sepals are usually blackish purple."

Some transferences of names may puzzle future students of the Dorset Flora; e. g., *Fumaria parviflora*, at p. 55 of the 1st ed., comes under *F. muralis* of the 2nd. Bell-Salter ed. 1839 does not seem sufficient authority for *F. parviflora;* those who know the contemporary literature of that period are aware how frequently *F. parviflora* was confused with other species.

Under *Crambe maritima* we have exactly the same stations given as in the 1st ed.; this seems to be the case in most Floras, and probably in half of these it will not now be found; it is (as remarked by Mr. H. C. Watson) one of our decreasing species. In the Dillenian herbarium at Oxford there is a specimen of *Lepidium Smithii* gathered by Mr. Stonestreet, "Found on ye seashore in ye parish of Ham, nr. Poole, in Dorsetshire." This is probably covered by one of the modern authorities given.

The only record in this edition for *Cerastium pumilum* Curt. is on the authority of the Rev. W. W. Newbould, without locality. Under *Stellaria umbrosa* the authority "Opitz" should be Opiz; this is so common a mistake that it may be well to point out that Opiz was the botanist, and Opitz a doctor of the same place and time, after whom Opiz named a plant (in his *Naturalientausch*) *Mentha Opitziana.*

I think that Mr. Townsend's var. *maritimum* of *Trifolium arvense* should bear the name of var. *perpusillus* DC.

Under the *Rubi* several notes are given, excerpts principally from Dr. Focke's papers, letters, &c. Hybrids are represented by seven combinations.

No hybrids are recorded under *Epilobium.* One is puzzled to know how Pulteney (1729–1799) separated the three Œnanthes,—*pimpinelloides*, *Lachenalii*, and *peucedanifolia* "Poll.,"—considering that up till about 1844 there was no botanist in Britain who did not confuse them in some way.* The flowering season of *Œ. silaifolia* Bierb. is given as "May–September." I do not hesitate to say that specimens gathered in August and September were not *silaifolia.* Its whole life-history is against such a possibility; its peculiar delicate constitution (if one may so call it) forbids it; in very backward seasons it might linger to the end of July, but the end of June is the latest I have seen it, after many years' observation.

Lange is given as the authority for *Arctium nemorosum;* in his *Handbook* and in communications he makes *nemorosum* a shade form of his *intermedium*, as he follows Kornicke in uniting Lejeune's plant with his *intermedium*.

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* Cf. *Journ. Bot.* 1893, 236, 338.

Sparganium affine Schinz is a rather unlikely plant to grow in "clay pits" in Dorset; is not *S. minimum* Fr. intended?

Under *Acorus Calamus* the author quotes Dr. Trimen's article in this Journal for 1871 (pp. 163–5), discussing its nativity; the conclusions arrived at years before by Dr. Bromfield in the *Phytologist*, old series, iii. 1009, should not be lost sight of.

The rich botanising ground in and around the "Little Sea" is inviting for an excursion. Many rare species have been discovered in this interesting neighbourhood since 1874, as *Lamprothamnus alopecuroides*, *Chara baltica*, *Festuca ambigua*, *Scirpus parvulus*, *Polygonum littoralis* and *menospeliensis*, *Carex punctata*, *Chara canescens*, &c.

The *Flora* contains two maps, one of the botanical divisions, and one of the geology of the county, with an interesting account of the geology. Who, as a young geologist, has not longed to start for Lyme Regis, or as an entomologist for Lulworth Cove and its neighbourhood? The coast scenery in Dorset is very attractive, especially about "Durdle Door" and its surroundings.

Lists of plants found in Hants, but not in Dorset, and *vice versa*; with a list of the rarer plants of the county "which have come under the notice of the author," and a comparison of the flora with the adjacent counties and Normandy, which follow a short notice under "Topography." This is hardly up to date, but I am well aware how difficult it is to make such lists even approximately correct.

Two lists of "Addenda" are given, which include some lately found rare species for the county, as *Eriophorum gracile*, *Cyperus fuscus*, &c.

A. B.

Dictionnaire Iconographique des Champignons supérieurs (Hyménomycètes) qui croissent en Europe, Algérie et Tunisie. Par MAURICE C. DE LAPLANCHE. Paris: Klincksieck. 1894. Pp. xii, 542.

THIS is a very useful book of reference, and it withstands tests of its accuracy remarkably well. Since no less than 4751 species in 112 genera are dealt with, the serviceable character of the work is apparent, and the references to some of the more obscure publications with defective indices are of great value. After the dictionary there is a no less useful concordance, of the Friesian names with those of Barrelier, Batsch, Battarra, Bauhin, Bolton, Bulliard, Krombholz, Letellier, Paulet, Persoon, Schaeffer, and Sowerby. The addenda contain references to Barla, Britzelmayr, and others, bringing these up to date, and must unfortunately be consulted together with the dictionary. However, even with half a dozen separate addenda, the book would represent a saving of time to the student.

G. M.

ARTICLES IN JOURNALS.

Bot. Centralblatt (No. 8). — J. Eriksson, 'Ueber negativ-geotropische Wurzeln bei Sandpflanzen.' — (Nos. 9–12). O. Chimani, 'Untersuchungen über Bau und Anordnung der Milchröhren mit besonderer Berücksichtigung der Guttapercha und Kautschuk liefernden Pflanzen' (2 plates).

Bot. Gazette (Feb. 16).—J. M. Coulter, '*Compositæ* from Guatemala' (*Mallinoa*, *Pereziopsis*, genn. novv.: 2 plates). — De Alton Saunders, 'Costaria' (1 plate). — L. M. Underwood, 'Distribution of N. American *Marchantiaceæ*.' — D. H. Campbell, 'Sexual organs of Pteridophyta.'

Bot. Magazine (Tokio).—S. Okubo, *Rhododendron macrostemon.*

Bot. Zeitung (Mar. 16).—F. Oltmanus, 'Ueber das Oeffnen und Schliessen der Blüthen.'

Bull. de l'Herb. Boissier (Feb.). — J. Müller, 'Graphideæ Eckfeldtianæ in Louisiana et Florida lectæ.'—W. Barbey, 'Bochiardo, botaniste italien inconnu.' — N. Patouillard & G. de Lagerheim, 'Champignons de l'Équateur' (1 pl.). — J. Freyn, 'Orientalisches Pflanzenarten.'—H. Christ, 'Monstruosité de *Reseda lutea.*'

Bull. Soc. Bot. France (xli: pis. 8, 9: Feb.).—P. van Tieghem, 'Compléments à l'étude des Loranthées' (*Cyathiscus*, *Dactyliophora*, *Trithecanthera*, *Lysiana*, *Alepis*, genn. novv.). — P. Vuillemin, 'Polymorphisme dans le *Cornus sanguinea.*' — J. Daveau, *Eragrostis Barrelieri.* — A. Chatin, 'Truffes de Tunisie et Tripoli.' — A. Daguillon, 'Observations Tératologiques' (*Fuchsia*, *Hedera*, *Begonia*).—H. Coste & —. Sennen, 'Nouveaux *Centaurea* et *Teucrium* hybrides.' —C. Degagny, 'Sur la division du noyau cellulaire.' — M. Gagnepain, 'Notes tératologiques' (*Fraxinus*, *Ranunculus*, *Cirsium*). — L. Géneau de Lamarlière, 'Flore maritime de la Manche.' — A. Le Grand, 'Un *Potamogeton* stérile' (*P. compressus*).

Bull. Torrey Bot. Club (Feb. 26). — J. B. Ellis & B. M. Everhardt, 'New *Ustilagineæ* & *Uredineæ*.'—E. G. Britton, *Physocomitrella* & *Aphanorhegma* (3 pl.).—T. F. Allen, 'Japanese *Characeæ*.'—E. J. Hill, '*Tradescantia virginica*.'—J. K. Small, 'Hybrid Oaks' (4 pl.).

Erythea (March 1).—E. L. Greene, 'Dodecatheon.'—Id., 'Novitates Occidentales.' — H. E. Hasse, 'Lichens of Los Angelos.'—J. G. Lemmon, *Calochortus collinus*, sp. n.

Journal de Botanique (dated Jan. 1, 16). — F. Boergesen, 'L'anatomie des feuilles des plantes arctiques.'—(Jan. 16). Géneau de Lamarlière, 'Cryptogames vasculaires du Nord de la France.'—(Jan. 16, Feb. 1). 'Huit lettres de Charles de l'Escluse' (1592–3). — E. Belzung, 'Marche totale des phénomènes amylochlorophylliens.' — (Feb. 1). M. Gomont, *Scytonema ambiguum.* — G. Bertrand & A. Mallèvre, 'Recherches sur la pectase.'

Malpighia (fasc. x–xii: March). — E. Levier, 'Néotulipes et paléotulipes.' — V. Peglion, 'Flora Micologica Avellinese.' — O. Penzig, 'L'Acclimazione di piante epifitiche nei nostri giardini'

(1 pl.).—Id., 'Note di Biologia vegetale' (2 pl.). — P. A. Saccardo, 'Contribuzione alla Storia della Botanica Italiana.'— O. Mattirolo, 'E. Rostan' (d. Jan. 15).

Oesterr. Bot. Zeitschrift (March).—R. v. Wettstein, 'Zur Regelung der botanischen Nomenclator.'— J. Lütkemüller, *Spirotænia*.— C. Warnstorf, 'Zur Bryophyten Ungarns.'—J. v. Sterneck, *Alectorolophus* (1 pl.). — J. Freyn, 'Plantæ Karoanæ Dahuricæ.' — F. Arnold, 'Lichenologische Fragmente.'

BOOK-NOTES, NEWS, &c.

It is hardly necessary to remind the systematic botanist how effectually the identity of a well-known locality may be obscured by the substitution of its ancient Latin name—real or conjectured. The more pedantic the monographer, the more puzzling are his place-names, and the more frequently is the young and inexperienced systematist driven to consult the classical atlas, in his conscientious attempt to find out the modern equivalents of the names employed. Who, unaided, can be expected to recognise under Argentoratum, Juvavum, and Codanus sinus, the modern Strassburg, Salzburg, and Cattegat? Any attempt to lessen this difficulty is welcome. Such an attempt has been recently made by Dr. Hector De Toni in his *Repertorium geographico-polyglottum* (Patavii, 1894, pp. 8, ccxiv), which was issued at the end of Dr. J. B. De Toni's *Sylloge Algarum*, vol. ii. The *Repertorium* contains upwards of 13,000 entries of ancient and modern names and cross-references; and, though it is scarcely so polyglot as one might expect from the title, it is a most useful compilation. In a work of such magnitude one naturally expects to find errors and omissions; and one finds them here. In a work primarily intended for the use of algologists, we are surprised to find no mention of such important localities as the Cape of Good Hope and the Cape Verd Islands, both of which are apt to assume a Latin disguise; and of those botanical centres, Edinburgh and Kew. Errors are infrequent; but there appears to be a rare confusion under "Ponapia," which has among its synonyms Ascension and the Caroline Islands. However, it is the great merits and not the shortcomings of the work which deserve attention. It is a great advance on the classical atlas in that it gives the modern equivalent adopted in the principal countries of Europe. Thus "Monachium" or "Insinisca" = München, Munich, Monaco. The Monaco of the South of Europe was anciently "Monoecum," which looks very botanical. Though prepared chiefly for the assistance of algologists, the *Repertorium* will be found to be amply adapted for general use.—A. G.

We are glad to learn that the Rev. H. G. Jameson, in conjunction with Mr. H. N. Dixon, is preparing a new handbook of British Mosses, to take the place of his excellent *Illustrated Guide*, which is now out of print. The book will be fully illustrated.

We have received from Dr. Scott a copy of the paper "On the Organization of the Fossil Plants of the Coal-measures," recently published by him, in conjunction with Prof. Williamson, in the *Philosophical Transactions*. We congratulate the authors on this important memoir, with its clear descriptions expressed in accurate language, and its admirable plates. It deals with the stems, foliage, and fruit of *Calamites*, if we may include in the foliage of *Calamites* the genus *Sphenophyllum*. The long-continued researches of Prof. Williamson are brought together, and the discoveries and observations of Renault, Carruthers, Cormack, and Hick are illustrated and confirmed. In the general conclusions regarding the fruit, which is the most important investigation in the memoir, the authors agree with those published in this Journal by Mr. Carruthers nearly thirty years ago (*Journ. Bot.* 1867, 349). We are surprised that the authors should place in the same genus (*Calamostachys*) two plants, one of which is homosporous, like an existing *Lycopodium*, the other heterosporous, like *Selaginella*—characters which in our living plants are universally recognized as sufficient for generic separation, while some who have made a special study of these plants have placed them in separate orders.

At the meeting of the Linnean Society on Feb. 7th, Mr. G. F. Scott Elliot, who had returned home only on the previous day, gave an interesting account of his journey to Ruwenzori, and of the results, geographical, geological, botanical, zoological, and political, obtained by him. He had originally intended to proceed from the mouth of the Zambesi, by way of Lakes Nyassa and Tanganyika, to Mukambas, and so on to Albert Edward Nyanza, but abandoned the idea in favour of the route from Mombasa to Uganda. The country lying north-east of the Victoria Nyanza was described as a large rolling grassy plain, some 6000 ft. above sea-level, and well adapted for colonisation. Proceeding west from the Victoria Nyanza Lake to Mount Ruwenzori, which lies north of the Albert Edward Nyanza, and is said to have an altitude of 18,000 ft., four months were spent in exploring that district, under the great disadvantage of a dense cloud hanging over the mountain the greater part of the day, which often prevented the party from seeing more than fifty feet ahead. The sides of the mountain were clothed at the base with a thick growth of trees, resembling the laurel of the Canary Islands; above that bamboos to the 10,000 ft. level, and above that again, what the explorer could only liken to a Scotch peat-moss, into which the foot would sink at every step a foot or more. Large trunks, like those of *Erica arborea* of the Canary Islands, were noticed. Amongst other plants especially noticed was a gigantic Lobelia, attaining a height of five or six feet. Mr. Scott Elliot ascended Mount Ruwenzori to the height of 13,000 ft., finding evidence of animal life and numerous insects to a height of 7000 ft. The large collection of plants is being worked up at the British Museum. It is especially rich in balsams and asclepiads, and contains some interesting orchids and other petaloid monocotyledons. It is to be regretted that, for reasons stated, Mr. Scott Elliot was prevented from exploring Mount Elgon, as he had intended; but his ascent of the Kagera river, and the discovery that it is navigable, was regarded as an important contribution to geographical knowledge, and to the political future of Africa.

The ninth edition of the *London Catalogue* is on the eve of publication. We hope to notice it in our next issue.

Dr. Eyre Champion de Crespigny died of heart-disease on Feb. 15th, at his residence at Beckenham, Kent. He was born at Vevay, Switzerland, May 5th, 1821, and was educated at St. Paul's School, London, and at Heidelberg. After receiving his diploma he returned to England, and went through Bartholomew's and Guy's Hospitals. In 1845 he received an Indian appointment, and arrived in Bombay in September of that year. During his residence in India he was employed in the performance of various military, naval, and civil medical duties. In 1859 Dr. de Crespigny became Acting Conservator of Forests and Superintendent of the Government Botanical Gardens at Dapsorie, near Poonah; but failing health compelled his return to England in 1862. During his residence in India he made a small but interesting collection of coloured drawings of plants, which were acquired for the Botanical Department of the British Museum. On returning home he took up his residence at Beckenham, and devoted himself to his favourite study. He formed, partly through the Exchange Club and partly by purchase, a herbarium of considerable extent, mainly of British and European plants. The state of his health necessitated much open-air exercise, and the results of this appeared in his *New London Flora*, published in 1877. This is a handy little pocket volume, and was reviewed in this Journal (1877, pp. 311–314) by Mr. Reginald Pryor, whose singularly exact mind found a good deal to criticize both as to matter and manner. Beyond this Dr. de Crespigny did not publish, but devoted himself quietly to the study which had for many years been his chief interest.

Dr. David Lyall, R.N., died at Cheltenham at the end of February, aged 77. Sir Joseph Hooker, whose companionship Dr. Lyall enjoyed in the Antarctic Expedition of 1839–42, has kindly consented to contribute to these pages a notice of the deceased botanist.

A rising worker in Botany has been taken from us in the person of Edward Hamilton Acton, who died suddenly at Cambridge from heart-disease on February 15th. Mr. Acton was born at Wrexham on November 16th, 1862. From a school in Chester he obtained in 1877 an entrance Science Scholarship at Rugby, and while there published a paper on the carboniferous limestone in Denbighshire in the Report of the Natural History Society for 1886. In 1881 he went to St. John's College, Cambridge, and took up Natural Science. Brought up in the country, he had observed from boyhood the plants and animals around him. His father was a lover of nature, and had a thorough knowledge of the British Flora. Mr. Acton took a first class B.A. degree in 1885, his principal subject being Botany. In 1888 he was elected to a Fellowship. He assisted in the Chemical Laboratory very soon after taking his degree, and in 1893 succeeded Mr. Main as lecturer. He often assisted as a demonstrator in the Botanical School, especially conducting classes in plant physiology, and in 1892 gave his first regular course on vegetable physiology. This course is embodied in the book he published last year in conjunction with Mr. Francis Darwin on the *Practical Physiology of Plants*, which was reviewed in this Journal for March. In 1888 Mr. Acton published in the *Annals of Botany* (ii. 53) a paper "On the formation of sugars in the septal glands of *Narcissus*," and in 1889 he communicated a paper to the Royal Society on "The assimilation of carbon by green plants from certain organic compounds," of which an abstract is given in *Proc. Royal Soc.* xlvi. 118. Although his investigations were in the direction indicated by these papers, he knew British plants well, and when abroad always bought a local Flora and identified the plants he met with. We are indebted for most of the foregoing particulars to the very full notice which appears in the March number of the *Eagle*, the magazine of St. John's College, Cambridge, the editors of which have courteously sent us a copy.

By the death of Captain James Henry Augustus Steuart, at his residence, Salisbury Gardens, Ventnor, on February 26th, many botanists will feel that they have not only lost a valued colleague, but a warm-hearted and sympathetic friend. There were few branches of Natural History with which he had not at least some acquaintance, while his knowledge of the flora of this country was considerable. In his botanical studies and in the formation of his herbarium he was ably seconded by his wife. He was a member of the Botanical Exchange Club, and also of the Watson Botanical Club. A note upon *Gentiana Amarella* var. *præcox* (*Journ. Bot.* 1889, 217) connects him directly with this Journal. I am indebted for the following information to *The Isle of Wight Mercury* of March 2nd:—"Captain Steuart, who was about sixty years of age, was the only child of the late Rev. C. A. Steuart, of Sunningdale Park, Berkshire, and in 1855 married a daughter of Lord Guillamore, who survives him. He was educated at Eton, and early in life entered the 60th Rifles. He afterwards held a captain's commission in one of the Surrey Militia regiments. In his younger days he was a keen and well-known sportsman. He was an excellent linguist, both practically and theoretically, and his devotion to Isle of Wight botany was very great—in fact, he possessed a remarkable store of general knowledge, which he was ever ready to impart to those who sought information from him. His cheery greeting, instructive conversation, and kindly manner will be sadly missed by all those who were fortunate enough to possess his friendship." These words of appreciation will be endorsed by all with whom he corresponded, or who have shared his botanical rambles or enjoyed his hospitality. He was buried at Kensal Green on March 2nd.—R. F. T.

We greatly regret to record the death of Mr. A. G. More, which took place in Dublin just as we were going to press.

AN ACCOUNT OF THE GENUS ARGEMONE.

By D. Prain.

In the course of a study of the *Papaveraceæ*, it has been found difficult to reduce the various forms of *Argemone* to systematic order. The genus does not appear at present to occupy the attention of horticulturists; it was, however, a favourite one in European gardens between 1827 and 1840, and as it is just possible that it may again come into fashion, an attempt at its arrangement may not be out of place. In the hope of appreciating the relationship of the various forms to each other, I have taken the opportunity afforded by a temporary residence in Europe to examine the material preserved in the herbaria of London, Paris, and Geneva. The present paper embodies the results of this examination, and is to be considered rather an account of the specimens of *Argemone* in the herbaria examined than a final review of the genus. This tentative revision is offered more in the hope that its perusal may induce American botanists, who alone are in a position to undertake the necessary field-study, to prepare the much-needed authoritative review that is called for, than in the belief that my conclusions are in every case justifiable. If, however, it is impossible to pronounce a final opinion on the systematic rank of any, save one (*A. fruticosa*), of the different forms here defined, it has been found possible, with the assistance of the European material, to assign authoritatively to all but one of them (*A. corymbosa*) their primary bibliographic references. As this portion of the paper may prove of use to students of the genus who cannot compare for themselves the specimens in the herbaria I have consulted, I offer this as an excuse for the preparation of a review that is incomplete as to matter and indefinite in result.

The public collections consulted have been the herbaria of Kew (with the subsidiary *Herb. Carey*), of the British (Natural History) Museum, and of the Linnean Society (*Herb. Linnæus*) in London; the herbarium of the Muséum d'histoire naturelle (with its subsidiary *Herb. Tournefort*, *Herb. Lamarck*, *Herb. Jussieu*, and *Herb. Durand*) in Paris; and the Public Herbarium of Geneva (including *Herb. Delessert*); for facilities and assistance in examining these I am deeply indebted to Mr. Dyer, Mr. Carruthers, M. Bureau, and Dr. J. Mueller. At the same time I have examined the material in the private herbaria of M. Casimir DeCandolle (including the *Prodromus Herb.*) and of M. Barbey-Boissier at Geneva, as well as that in the herbaria of M. Drake del Castillo (including *Herb. Richard*) and of M. Cosson in Paris, all of which have been most kindly placed at my disposal by their respective owners. For much kind help most ungrudgingly given during the study of this genus my very warm thanks are also due to my friends M. Ad. Franchet and Mr. C. B. Clarke.

ARGEMONE Tournef.

Flores 3-meri, receptaculo anguste conico; sepala 3 conformia sub apicem cornuta et lateraliter parum alata, libera convoluta decidua; corollæ 2, petalis utriusque 3, conformibus convolutis vel imbricatis deciduis; stamina plane indefinita hypogyna, filamentis filiformibus vel medio (rarius prorsus) parum dilatatis apice subulatis, antheris linearibus basifixis extrorsum 2-rimosis post anthesin curvatis; carpella definita 4 (rarissime 3)–6 in germen ovatum vel cylindrico-ovatum vel subfusiforme coalita, placentis nerviformibus ∞-ovulatis, stylis brevibus vel brevissimis prorsus coalitis stigmata totidem ovata acuta discreta intus sinubusque stigmatosa cum placentis alternantia gerentibus; matura aculeata (rarissime inermia) placentis stylisque persistentibus, valvis nunc triente summo nunc fere ad basin soluta; semina plurima globosa testa reticulata raphe parum sed distincte cristata.

Herbæ ramosæ sæpe robustæ annuæ, biennes vel raro forsan perennes (species singula frutex lignosus perennis) glaucescentes; succus flavus; folia inciso-pinnatifida (cnicoidea) vel lobata (ilicina) sæpissime caulibusque spinosa et aculeata vel rigide setosa, raro hispida; flores terminales vel cymosi, albi, rarius flavi, rarissime rosei, alabastris erectis.

Species certiores 6, formæ distinctæ tamen saltem 11, omnes Americanæ; forma singula tamen late per regiones tropicas subtropicasve orbis totius, altera stricte in insulis archipelaginis Hawaiensis inquilina.

The genus *Argemone* as at present understood was defined by Tournefort, who included in it only one species, which he named, on the supposition that it was of Mexican origin, *A. mexicana*.* This particular plant he appears, however, only to have known through European cultivated specimens; at all events, those in his herbarium are garden ones. It was first introduced to Europe in 1592, and was raised in London by Gerard, who sent seeds or examples to C. Bauhin. It was described by both authors, though Bauhin's description appeared a year before that of Gerard. Bauhin named it *Papaver spinosum*,† a name that indicates with considerable accuracy its natural position, and that possesses the advantage of conveying no misleading geographical significance; his English friend named it *Carduus chrysanthus peruanus*,‡ an expression that merely translates the name "Golden Thistle of Peru," by which it was known to the earlier English voyagers to the West Indies, and under which it was brought to Gerard from the Antilles. It may be one of the several plants included by the Mexicans under the name *Chicalotl*,§ for it certainly is included among those known to the Spanish Americans as *Cardo Santo* and *Figo del Inferno*,‖ two terms that cover, after a fashion, the Mexican

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* Tournefort, *Elem.* 204 (1694).

† C. Bauhin, *Phytopinax*, 311 (1596).

‡ Gerard, *Herbal*, 997 (1597).

§ Hernandez, *Histor.* 215 (1651).

‖ For a quaint explanation of this term see Gerard's *Herbal;* this explanation will be found sometimes, but erroneously, attributed to Johnson, who edited a later edition of Gerard, by authors who have not consulted the original work.

name. An examination of Hernandez's figure shows, however, that it is not *A. mexicana* which he attempts to delineate; a study of Mexican specimens shows that, except from one or two places close to seaports on the eastern coast, where it is only an introduced, and probably a recently introduced, plant, *A. mexicana* does not occur in Mexico at all. At the same time Hernandez points out that the name *Chicalotl* includes white-flowered forms for which the Spanish American name at present is *Cardo blanco*, the other epithet being restricted to yellow-flowered ones. The common English name for the plant now, alike in the West and the East Indies, as well as throughout the United States, is the "Prickly Poppy" or the "Mexican Poppy"; these terms are, however, applied to most of the Argemones, and are not any longer restricted to *A. mexicana*.

In the light of the material of the natural order *Papaveraceæ* reported during the seventeenth century, Tournefort was amply justified in separating Bauhin's *P. spinosum* from *Papaver;* as he was at the same time relegating to *Papaver* all the species known to earlier authors as *Argemone*, he did well to utilize this classical name in designating his newly defined genus. It must, however, be recollected that in so doing he altered completely the incidence of the name, and that the etymology of the word, which referred to a supposed efficiency of the juice of the classical *Argemone* in the treatment of cases of cataract, bears no relationship to any attribute, real or imputed, of the genus as now understood.

The original *Argemone* of classical and post-classical writers included apparently the plants known now as *Papaver Argemone* and *P. hybridum*, two species of *Papaver* § *Rhœades*. According to C. Bauhin, however, who may be quoted as one of the ablest taxonomists the science of Botany has ever known, this genus included two forms now referred to *Papaver* § *Scapiflora*, viz., *P. nudicaule* (*alpinum*) and *P. nudicaule* (*pyrenaicum*).[*] To these four Morison added later another *Papaver* § *Rhœades*,—the plant now known as *P. dubium*.[†] All five owe their true localisation in *Papaver* to Tournefort, whose simple and natural arrangement was at Linnæus's disposal when half a century later he issued the *Species Plantarum*. Linnæus, however, was unable to accept either Bauhin's or Tournefort's conclusions; the two prickly-capsuled *Rhœades*—the classical *Argemone*—he referred, with Tournefort, to *Papaver;* he did the same with Morison's *Argemone*—indeed it was only as an afterthought that he separated it specifically from *P. Rhœas*. So far all is clear; it is his further treatment that is disconcerting. Of the two § *Scapiflora* Papavers, which most authors now admit to be conspecific, he, following Tournefort, placed one in *Papaver*, and, following Bauhin, placed the other in *Argemone*. Linnæus still further complicated matters by adding to *Argemone* a third species unknown to Bauhin or Morison, which was first discovered and described by Tournefort.[‡] This plant—

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[*] C. Bauhin, *Pinax*, 171, 172 (1623).

[†] Morison, *Hist. Univ.* i. 279, § iii. t. 14, f. 11 (1680).

[‡] Tournefort, *Corollar.* 17 (1703).

Argemone armeniaca Linn.—is at present treated as the type of the very distinct § *Miltantha* of *Papaver*, quite as distinct from any of the other sections as half the proposed genera of *Papaveraceæ* are from each other. When its subordination from utilitarian motives to one of the larger allied genera is decided upon, it becomes a very open question whether it ought to find a place in Tournefort's *Papaver* or in Viguier's *Meconopsis:* its stigmas are arranged and its capsule dehisces exactly as in the latter genus; the only character that separates it from *Meconopsis* and justifies its association with *Papaver* is the absence of a distinct style. But though its characters go far to justify Linnæus in removing this plant from *Papaver*, they do not in any way support his location of it in *Argemone.* The result, however, of the treatment in the *Species Plantarum* is that the Linnean genus *Argemone* can only by courtesy be quoted as synonymous with that of Tournefort. Whereas the Tournefortian genus, by completely excluding the *Argemone* of Bauhin, and thus of necessity also the classical *Argemone*, remained as a result of Tournefort's definition and limitation the apparently natural genus that we still accept, the Linnean *Argemone* is a mere arbitrary conglomeration of *membra disjecta* without even possessing the excuse of attempting to conserve the classical incidence of the name. The only possible explanation of this treatment is that Linnæus had not seen, when the *Species Plantarum* was issued, either his *A. pyrenaica* or his *A. armeniaca*, and it is interesting to find that he probably never saw them, for neither is represented in his own herbarium. In 1753 Haller published an *Argemone* which is evidently a *Papaver*, and is probably a form of *P. nudicaule* (*alpinum*).* But no other author has added a species to the genus in the Linnean sense, and the confusion introduced by Linnæus did not long persist, for in 1784 Lamarck again restricted it within the Tournefortian limits; † with perhaps the single exception of Lestiboudois,‡ he has in this been followed by all subsequent authors of any importance.

The place usually assigned to the genus *Argemone* is alongside of *Meconopsis*, *Papaver*, and the allied genera that constitute the *Eupapaveraceæ*. This is not an altogether convenient arrangement, because it places among genera in which the flowers are usually of 2-merous type one in which the floral arrangement is normally 3-merous. It is quite impossible, however, to find any character in this troublesome order that does not at times break down, and in the present instance the two most distinctive characters, a constant or almost constant 3-mery and the presence of horns under the apex of the sepals, both fail us within the limits of the group of species that we are accustomed to treat as forming the genus *Papaver*. Not only is the presence of 3-merous flowers an occasional feature in wild examples of § *Scapiflora* (*P. nudicaule*), and in a species (*P. lateritium*) that forms a connecting link between § *Scapiflora* and § *Calomecon*, but it is a normal character in both the varieties of *P. orientale*, which is the type of this latter section; occasionally it occurs in cultivated, more rarely in wild, examples of several other species. Then the peculiarity of horned sepals is characteristic of *Papaver pavoninum*, which is otherwise very nearly related to *P. Argemone* and *P. hybridum*.

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* Haller, *Plant. Goetting.* 89. † Lamarck, *Encyc. Meth.* i. 247.

‡ Lestiboudois, *Bot. Belg.* iii. pt. 2, 132 (1799).

But the arrangement is moreover as unnatural as it is inconvenient, for the position in question is based on a misdescription of the stigmatic lobes. In place of having concrete stigmas, as in the Papavers and the majority at all events of the Meconopses, the lobes remain discrete, as they do in *Chelidonium* § *Stylophorum*. The lobes are moreover erect, and alternate with the placentas; the structures so often described as radiating stigmatic lobes opposite the placentas are nothing more than horizontal prolongations of the sinuses between the lobes. But even this distinction, which has been greatly used in most systematic arrangements of the *Papaveraceæ*, is of little real importance, for we now find that it is necessary to include in *Meconopsis* forms that exhibit this very peculiarity. Taken as a whole, however, its generic characters ally *Argemone* most closely with the genus *Romneya*. This genus, supposed, when its name was employed by Mr. Bentham to designate the tribe *Romneyeæ*, to be characterised by having discrete ripe carpels, is now found to have a fruit that is not distinguishable from the fruit of a *Meconopsis* or an *Argemone*, and thus clearly connects *Platystigma*—which, as Mr. Greene has shown, does not deserve to be recognised as generically distinct from *Platystemon*—with *Argemone*. *Arctomecon* too, now that its structure is accurately known, cannot be generically separated from *Romneya*, in spite of the intruded placentas of the latter,* for the differences between *Romneya Coulteri* and *Arctomecon californicum*† are not greater than those between *Papaver somniferum* and *P. nudicaule*, not nearly so great as those between *Meconopsis robusta* and *M. Henrici*. And indeed the generic distinction between *Romneya* and *Argemone* is, on close examination, found to be of the slightest; there is only the partial separation of the tips of the styles in the first, and the presence of horns on the sepals of the last, left to differentiate them. We thus pass among the genera of trimerous type from *Platystemon*, where the ripe carpels are discrete, or nearly so, through *Romneyá*, with its united ripe carpels, but partially discrete styles, to *Argemone*, with styles as well as carpels fused, but with stigmatic lobes so discrete that their stigmatic surfaces are only continuous at the bases of the intervening sinuses. This being the case, no hesitation is felt in uniting to the same group the curious 3-merous genus *Canbya*, where there is no longer any style, but where, as in *Papaver*, the merely marginal linear stigmas are, when mature, concreted into rays along the placental ribs, thus giving rise to the condition spoken of in *Papaver* and its allies, with sufficient accuracy from the taxonomist's, but quite erroneously from the morphologist's point of view, as that of "stigmas" *opposite* the placentas.* For the whole of these 3-merous genera—all of them, it is to be noted, American—the name *Romneyeæ* with a modified significance may still be conveniently employed. But the rank of this group is probably no more than sub-tribal; along with the extremely natural 2-merous group *Hunnemannieæ*, characterised, like *Platystemon*, by valves that in dehiscing carry away the placentas on their margins,—also, like the *Romneyeæ*, purely American, and, like them, probably only of subtribal rank,—the *Romneyeæ* form a very natural "tribe," to which the name *Arctomecones* may not inappropriately be applied. This, however, is a question of academic rather than of practical interest, and cannot be pursued further or in greater detail in a sketch like the present.

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* This difference, at first sight considerable, is rendered insignificant by the occurrence of two Meconopses in China, one (*M. chelidonifolia*) with an ovate fruit and deeply intruded *Papaver*-like placentas, the other (*M. Oliveriana*) with a narrow cylindric fruit and nerviform ones; these two species are in every other respect so alike as to be indistinguishable.

† A careful examination and analysis of *A. californicum* and *A. humile* leads me to fear that Mr. Coville's separation of these as species, though certainly convenient from the local point of view, cannot be sustained when the order is examined from the monographer's standpoint. This applies with even greater force to *A. Merriami*, which, however, I only know from Mr. Coville's drawing and his excellent description. The polymorphism in this alpine species is by no means so excessive as that displayed in the corresponding *Papaver* (*P nudicaule*); even the tendency to 2-mery shown in *A. humile* is paralleled by the tendency to 3-mery shown in *P. nudicaule* proper.

The statement that the floral arrangement in *Argemone* is not always 3-merous has found a place in most accounts of the genus.† The authorities for the statement are Haller, who describes an *Argemone flore albo, sæpe 3-petalo* [*Pl. Goett.* 89 (1753)]; Zinn [*Pl. Goett.* 116 (1757)], who embellishes his definition of the genus with the purely imaginary character of the petals being equal in number to, and varying directly with the number of, the carpels; Sims [*Bot. Mag.* t. 2342 (1822)], who figures *A. albiflora* with four sepals and eight petals; and Croom [*Am. Journ. Sc.* ser. 1 xxv. 75 (1834)], who says that *A. Georgiana* has sometimes four sepals and eight petals. Haller's plant is also Zinn's, but Zinn, as his definition shows, knew nothing about the genus, and, as his reference shows, knew nothing about Haller's plant; so far as can be made out now, though the matter is of little moment, the plant was a *Papaver*, and not an *Argemone* at all. Sims' figure is so far accurate; the plant from which it was drawn has some, though not all, of the flowers 4-merous. Croom's remark is justified, for there is at Paris a wild specimen of the species described by him, collected in Florida, with some of the flowers 4-merous. But Sims' and Croom's plant are *the same species*, and are both of them Lestiboudois's *A. alba;* equally curiously, one of the oldest European cultivated specimen of this species, which once belonged to A. L. Jussieu, and is named *A. alba* Juss. in *Herb. Richard*, exhibits the same peculiarity; there are no others at London, Paris, or Geneva. It is, however, a peculiarity apparently specific; not a single example at London, Paris, or Geneva of any other species has a flower with more or fewer than three sepals and six petals; there is certainly not at Kew or in the British Museum a specimen of *Argemone* with two sepals or four petals. The undue emphasis that has been laid on this variability, confined, as it seems to be, to a solitary form in which it but rarely occurs,—which most taxonomists have moreover insisted on treating as only a variety of *A. mexicana*,—can be best combated by omitting the character from the generic description; it is certainly not in the slightest degree characteristic of the genus.

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* The true state of affairs in *Papaver* was stated in 1839 by Elkan, and demonstrated conclusively in 1857 by Payer; organically the placentas are in *Papaver*, *as in every other* Papaveraceous *genus*, alternate with the placentas.

† "Sepala 2–3 (rarius 4?). Petala 4–6 (rarius 8?)."—Bentham & Hooker, *Genera Plantarum.* "Flores plerumque 3-meri."—Baillon, *Hist. des Plantes.* "Bl. zuweilen 3-zählig."—Prantl & Kündig, *Nat. Pflanzenfam.*

(To be continued.)

RECENT ADDITIONS TO THE FLORA OF BRECONSHIRE.

By the Rev. Augustin Ley.

Ten years have elapsed since Mr. W. Bowles Barrett published in this Journal his 'Contribution towards a Flora of Breconshire.' The workers in the field botany of the county have remained so few that no large number of additions have been made. Enough, however, of material has now accumulated to make it desirable to ask for a place for its record in the *Journal of Botany*; hence these notes.

Some of the following have already been published in a paper written by the author for the Woolhope Field Naturalists' Society (*Transactions*, 1890–2, p. 86), and of these a considerable number was due to the industry of Mr. W. P. J. Le Brocq and some fellow-workers of his in the neighbourhood of Brecon itself. Those records now published for the first time are marked with an asterisk. Where no other authority is quoted, the writer is personally responsible for the records. His thanks are due to Mr. F. J. Hanbury and the Rev. W. Moyle Rogers for much help in the critical genera of *Hieracium* and *Rubus*, and to Mr. Arthur Bennett for kindly criticising the list before publication.

†*Hesperis matronalis* L. Near Brecon, "well naturalised"; *Le Brocq*.

Brassica Rapa L. var. **Briggsii* H. C. Wats. Tillage-field near Tal-y-bont.

Lepidium **ruderale* L. Pen-y-wyllt. — *L.* **campestre* R. Br. Wall at Cefn Coed.

**Hutchinsia petræa* R. Br. Limestone cliff at Dan-y-graig, near Cefn Coed; and at Craig Cille, plentifully.

**Saponaria officinalis* L. Bank of the Usk, near Tal-y-bont.

**Hypericum elodes* Huds. Ditch at Blaen Taf-fawr.

**Genista anglica* L. Doldowlodd; Cwm Taf-fechan.

Trifolium striatum L. Canal bank near Brecon; *Le Brocq*.

Geum intermedium Ehrh. Fenni-fach, near Brecon; *Le Brocq*.

Rubus **rhamnifolius* W. & K. Crickhowell; Tal-y-llyn. — *R.* **pulcherrimus* Neum. Tal-y-llyn. — *R.* **Lindebergii* Muell. Near Crickhowell.—*R.* **Schlectendalii* W. Llangrwyne, near Crickhowell. — *R.* **pyramidalis* Kalt. Glyn Collwng abundantly. — *R.* **Leyanus* Rogers. Railway sides near Torpantau, ascending to above 1000 ft.; near Clydach, in small quantity. — *R.* **infecundus* Rogers. Abundant in a copse at Cwrt-y-gelli, Crickhowell. — *R.* **Kaltenbachii* Metsch. Near Crickhowell, in more than one station; near Pont-nedd-fechan.—*R.* **dumetorum* W. & N. Abundant near Crickhowell.

Rosa canina L. var. **platyphylla* Rau. Hedge, Tal-y-bont.—Var. **frondosa* Steven. With the last, Tal-y-bont. — Var. **obtusifolia* Desv. Near Tal-y-llyn.

Pyrus †*Aria* Sm. Plantation, Ffrwd-grech, near Brecon; *Le Brocq*. — *P.* **intermedia.* Limestone cliff, Craig Cille; lime rocks, Blaen-onnen, near Crickhowell. — *P. Malus* L. var. **acerba.* Rough hill-side near Pontsarn Station.

Epilobium **roseum* Schreb. Tal-y-llyn; abundant in a ditch near the lake.—*E.* **Lamyi* Wirtg. Tal-y-llyn, at a single spot.

†*Lonicera Xylosteum* L. Plantation, Ffrwd-grech, near Brecon; *Le Brocq.*

**Erigeron acre* L. On the railway near Talsarn Station.

*†*Antennaria margaritacea* Gaertn. With the last, on the railway near Talsarn Station.

**Inula Conyza* DC. Road-side, Llangrwyne, near Crickhowell.

Petasites †*fragrans* Presl and *P.* †*albus* Gaertn, "together with snowdrop, monkshood, lesser periwinkle, and other plants, were introduced more than thirty years ago in a wooded glen on the Cynrig in Cantreff Rectory grounds, and are now thoroughly naturalised there"; *Le Brocq.*

†*Doronicum Pardalianches* L. Near the shrubberies, Ffrwd-grech, near Brecon; *Le Brocq.*

Hieracium **Leyi* F. J. Hanb. Craig-y-gledsiau, Cwm Tarell.—*H.* **lasiophyllum* Koch. Limestone rocks, Craig Cille, near Crickhowell.—Var. **euryodon* F. J. Hanb. Craig-du, in the Senni valley. — *H.* **argenteum* Fr. Rocks by the Taf-fawr, and in Cwm Crew; also on a hedge-bank at the bottom of Cwm Crew, Nant-du.—*H.* **stenolepis* Lindeb. Craig-du (sandstone); Craig Cille; Craig Rhiwarth (limestone), abundantly. — *H. murorum* L. ex p., var. **ciliatum* Almq. Brecon Beacon cliff; Craig-y-gledsiau. — *H.* **euprepes* F. J. Hanb. (type). Craig-y-gledsiau. — *H.* **Adlerzii* Almq. Stream-side rocks, Blaen-y-Cwm, Llanwrtyd, 1890. — *H.* **corymbosum* Fr. Abundant in parts of Breconshire; Mellte Glen, S. Breconshire; Irvon Glen, above Llanwrtyd, N. Breconshire.—Var. **salicifolium.* River-side glens; near Llanwrtyd; Mellte Glen; Cwm Taf-fechan. — *H.* **crocatum.* Mountain rocks, Capel Cellwen; on the Usk, at Senni Bridge, Mellte Glen.

†*Hypochœris glabra* L. "Colonist, in cultivated fields. Llechfaen, near Brecon. Garden weed at Brecon"; *Le Brocq.*

**Ligustrum vulgare* L. Limestone of Craig Cille, at about 2000 ft.; native.

***Verbascum Thapsus* L. At several stations near Brecon.

Veronica serpyllifolia L. var. *humifusa* Dicks. "Moorland of the Brecon Beacon range, not rare; Cwm Cynwyn"; *Le Brocq.* — *V. scutellata* L. Llanfrynach and elsewhere.

Lathræa Squamaria L. "Lower part of Glen Tarell, and at other stations near Brecon"; *Le Brocq.*

Ballota nigra L. var. *alba.* Very rare. At the junction of the Tarell and the Usk.

Polygonum Persicaria L. var. **elatum.* On the Usk, at Tal-y-bont. — *P. Bistorta* L. Llwch Lane, and other spots near Brecon; *Le Brocq.*

Ulmus montana Stokes, var. †*nitida; U. campestris* Sm., the ordinary English form, with the variety with spreading limbs, more suberous young shoots, and more glabrous leaves (*suberosa* Ehrh.?), and other varieties, occur in abundance as planted trees in the Usk valley near Crickhowell, and at other places. The var. *suberosa* Ehrh. ascends the mountain valleys much further than the other vars. of *U. campestris*, and looks quite spontaneous, as, for example, between Cefn Coed and Nant-du, in the Taf-fawr valley.

Populus *†*nigra* L. Several trees, near Crickhowell.

Epipactis palustris Crantz. "Cwm Serre, and at other stations near Brecon"; *Le Brocq.*

Orchis Morio L. Cefn Cantref, near Brecon; *Le Brocq.*

Habenaria chloroleuca Ridley. Cwm Serre; Blaen-rhyd-nant; *Le Brocq.*

Polygonatum multiflorum All. At Senni Bridge, and near Brecon; *Le Brocq.* — *P.* **officinale* All. Wooded limestone cliff, Craig Cille, at about 1800 ft.

Carex **curta* Good. Rare. Moorland at the head of the Nedd. —*C. fulva* Good. var. **Hornschuchiana.* Moorland at the head of Dyffryn Crawnon.—Var. **xanthocarpa.* With the last, at the head of Dyffryn Crawnon. With *C. fulva* Good., type, in Cwm Taf-fechan.

Deschampsia flexuosa Fries, var. *montana.* Fringing the highest part of the central cliff of the Brecon Beacon; Craig-y-van-du, abundantly.

Avena **pubescens* Huds. Hill-side (limestone) near Talsarn Station. — *A.* **pratensis* L. Dan-y-graig lime rocks, near Cefn Coed; bottom of Cwm Crew, Nant-du.

AFRICAN POTAMOGETONS.

By Arthur Bennett, F.L.S.

In the *Conspectus Floræ Africæ* Messrs. Durand & Schinz have given the names and distribution of the species as known to them. The following notes will augment and supplement their account:—

Potamogeton crispus L. I have seen specimens from Ethiopia, Kordofan, Lake Nyassa, Griqualand, Cape of Good Hope, Vaal River, S.E. Africa, Dammari, and Libyan Desert.

P. DENSUS L. "Amérique bor." is an error. Schweinitz, when he reported this for N. America, mistook *Anacharis* for it.

P. LUCENS L. I have seen specimens from Transvaal, Madagascar, Abyssinia, Natal, Delagoa Bay, Suez, Central Africa (*Schur*, No. 1165), Senegal (var.), and Lake Nyassa. The Central African specimens are mostly (or all?) *P. longifolius* Gay! I have seen no specimens of this from the Mauritius, and think what is so called is a new form or subspecies of *lucens?* My specimens are certainly not *crispus;* but they are not sufficient to describe, or describe as new.

P. NATANS L. (*verus*!). Abyssinia, sources of the Limpopo (*Nelson*, 514), and Natal.

I do not understand that Chamisso (*Linnæa*, ii. 1827) uses his names in the sense adopted in the *Conspectus;* he uses them as specific, not varietal for certain, using the letters merely as headings to the various parts they come from. So that the authority for *P. canariensis*, as used in the *Conspectus*, is Kunth, *Enum.* ii. 128, not Chamisso; the same with *capensis* and *mascarensis*. Boissier is quite correct in his citation "*P. serotinus* Schrad.," only there should be added, "apud Koch, *Syn. Fl. Germ. et Helv.* ed. 2 (1844)." "*P. natans* var. *capensis*," Natal.

P. FLUITANS Roth (auct.). It is not easy to give certain localities for the above, but I believe the following may be regarded as correct:—Tripoli, Madagascar, Transvaal, Marocco, Lagos, and Egypt.

P. JAVANICUS Haskl. Lake Nyassa.

P. PECTINATUS L. The following are to be added:—Tripoli, Cape of Good Hope, Bourbon, Angola, Lake Nyassa, Mozambique, Natal, Griqualand, Transvaal, and Madagascar.

P. FILIFORMIS Nolte! Egypt.

P. PECTINATUS L. To the distribution of this add Asia (nearly all over!), America (both South, Mid, and North), and Australia.

P. COLORATUS Hornem. This plant exemplifies how hard it is to "kill" an error! I have repeatedly stated that the date 1823 on the cover of the fascicle of the *Flora Danica* containing this *is an error*. It is a misprint for 1813, as can easily be seen by turning over the plates, and finding 1818 *coming after*. Yet the *Conspectus* uses *plantagineus* Ducros (he wrote his name Du Croz), 1818. W. Indies is to be added to the distribution.

P. POLYGONIFOLIUS Pour. Add Marocco, Madeira, Canaries, Angola, and Madagascar. To the distribution add Asia (Siberia to China, Tibet, India, and Japan) and Australia.

The citation "Koen. & Sims, Ann. Bot." for *oblongus* Viv. is a curious one. *P. oblongus* Viviani! *Anal. Bot.* ii. 102 (1802) and *Frag. Fl. It.* 1, t. 2 (1808) is the correct authority.

P. PUSILLUS L. Add Libyan Desert, Transvaal, Natal, and Canaries (not *P. denticulatus*). The reference *P. denticulatus* Link! should go to *P. trichoides*, for Reichenbach was in error when he stated it was not different from *pusillus;* he had seen no fruit. Add N. America to the distribution.

P. TRICHOIDES Cham. I have specimens from "Teneriffe" named as *trichoides*, but I doubt their being correct; there is no flower or fruit. To the distribution add Asia, "Anti Libanos" Post, a plant described as *P. Phialæ* Post in *Bull. Boissier*, i. 409, but is meant to be the var. *tuberculosus* Reich. *Icones*. There are specimens in herbaria from S. Africa named "*P. obtusifolius*," &c.; they are, I believe, a form of *P. Friesii* Rupr.

P. FLABELLATUS Bab. I have seen African specimens of this from Madagascar and Egypt.

P. ALPINUS Balbis (*P. rufescens* Schrad.). Cape of Good Hope, in "Brack river"!

P. ZIZII Roth. Madagascar.

In addition to these, there is a species in Lake Nyassa allied to *P. Robbinsii* Oakes, of N. America; whether it is that species or a new species, the fragmentary specimens seen are quite insufficient to decide.

The reference "Iles Mariannes" under *P. lucens* L. belongs rather to *P. mucronatus* Presl, a good species, very distinct in foliage, and especially fruit, from *lucens*. It occupies a limited area, occurring in China, Japan, Loo Choo Isles, Philippines, Borneo, Tibet, and rarely in India.

I see that Solms-Laubach has described (Schweinf. *Fl. Æthiop.* 194, 292 (1867)) the Abyssinian specimens (Schimper, i. 135) as a species (*P. Richardii*); when I suggested that this was new I was unaware that he had done so.

THE PLANTS OF WELWITSCH'S APONTAMENTOS, &c.

By W. P. HIERN, M.A., F.L.S.

THE contribution of the Editor (pp. 70–77) on the subject of the plants named in Welwitsch's *Apontamentos phyto-geographicos* and *Synopse explicativa* cannot fail to prove serviceable to students of the Botany of Western Tropical Africa; a few supplementary notes may be supplied.

The date of publication of the *Apontamentos phyto-geographicos sobre a flora da provincia de Angola*, &c., must not be taken as December, 1858: it is true that this latter date is printed on every sheet of the publication, namely, at the foot of the first and every subsequent eighth page, and is thus repeated so as to occur nine times altogether; but on the last page, 593, there are furnished observations bearing date "Lisboa, 15 de Novembro de 1859," and there was also given on the same page a further explanatory note containing the following words:—"Motivos independentes da redacção do Boletim e Annaes do Conselho Ultramarino, demoraram a publicação d'este numero. Esta circumstancia permittier que n'elle se inserisse o catalogo da interessante collecção de sementes enviada de Angola pelo sr. Dr. Welwitsch. Não tendo porém elle sido ordenado para a imprensa, foi necessario organisa-lo para ser publicado, sem que, pela estreiteza de tempo, podesse ser consultado o illustre auctor." It thus appears that the *Apontamentos* was published near the close of the year 1859, not earlier than the middle of November, notwithstanding the fact that this was the non-official part of the Annaes do Conselho Ultramarino of the Portuguese Government, the official date of which was December, 1858. I am aware that this publication has been and is frequently claimed as belonging to the year 1858; but, as practically conclusive against this claim, I quote the following extract from a translation of a letter from the author, Dr. Welwitsch, addressed to Sir W. J. Hooker, and dated "Equatorial West Coast of Africa, S. Paulo de Loanda, 4 April, *1859*":—"The abstract of my investigations within a circuit of 80 pagiras will shortly be printed at Lisbon by the care and at the cost of the Lisbon . . . . and as soon as the brochure is printed I shall have the honour of offering you a copy." The translation of this letter was printed in London as an exhibit in 1873 in course of the Chancery suit, The King of Portugal v. Carruthers, which was brought to settle a dispute as to the destination of the Welwitsch Collection; and the brochure mentioned therein could have meant no other work than the *Apontamentos*. By order of the court in that action, and by agreement between the parties, it fell to my lot to make the separation and distribution of the collection, and to complete the assignment of the numbers to be given to the various gatherings: the whole of the vast herbarium thus passed through my hands, and I made and retain numerous memoranda relating to it.

The succeeding notes being supplementary to those of Mr. Britten, the plan of his arrangement is adopted; but the subject is not treated exhaustively:—

MONODORA ANGOLENSIS Welw. The publication of this name, in letters of Welwitsch to W. W. Saunders, printed in the *Journal of the Linnean Society of London*, vol. iii. pp. 151, 154 (1 Febr. 1859), antedates that of the *Apontamentos*, pp. 582, 587, n. 43, for the same plant.

Actinostigma speciosum Welw. does not appear to be specifically identical with the other Clusiacea which Welwitsch referred to his genus *Dactylanthera;* on the other hand, he considered them generically different, for his words, Apont. pp. 559, 560, are, "Ambas as especies arboreas formam novos generos."

Dactylanthera Welw. Apont. 560, sub no. 139, is apparently GARCINIA PUNCTATA Oliv. Fl. Trop. Afr. i. 167 (1868); Welw. Herb. 1050.

Hugonia macrocarpa Welw. is H. AFZELII R. Br. var. *melanocalyx* (Welw.) ex Oliv. Fl. Trop. Afr. i. 270, 271, and is neither of the plants called *H. angolensis* by Welwitsch in his herbarium; Welw. Herb. 1586; Coll. Carp. 293, 294.

Sesbania sericea Welw. This name, though not found in Welw. Herb., occurs in Coll. Carp. 387.

Cassia gracillima Welw. Apont. 590, n. 88 = C. MIMOSOIDES L.; Oliv. Fl. Trop. Afr. ii. 280, 281 (1871); Welw. Herb. 1712, 1713; Coll. Carp. 479.

Rhipsalis Æthiopica Welw. in Journ. Linn. Soc. iii. 152 (1 Febr. 1859) = R. CASSUTHA Gaertn. ex Welw. in Trans. Linn. Soc. xxvii. 35 (1869) (*Cassyta*); Welw. Herb. 876–878. This and the one preceding are omitted by Mr. Britten.

Aristolochia æthiopica Welw. = A. ALBIDA Duchartre; DC. Prodr. xv. i. 483; Welw. Herb. 511, 512; Coll. Carp. 936; it was so identified by Welwitsch himself in his Herb., and is now so placed in the British Museum Herbarium.

ALBUCA ANGOLENSIS Welw. Apont. 591, no. 107; Coll. Carp. 1035, nec Baker in Ref. Bot. t. 336, nec in Trans. Linn. Soc. ser. 2, i. 251, nec in Welw. Herb. 3836.

Cyathea æthiopica Welw. Apont. 587, no. 42 = C. ANGOLENSIS Welw. Apont. 538; Herb. 83, 186; Hook. Syn. Fil. 22.

The following corrections in numbers cited should be made:—p. 72, *Cleome oleracea*, for "Herb. 9586," read "958b"; p. 73, *Locellaria bauhinioides*, for "Herb. 546," read "546 *bis*"; p. 74, *Cucumis chrysocarpa*, for "Herb. 647," read "847"; p. 75, *Maranta discolor*, after "Herb.," supply "6440." The date of Murray's Journal of Travel is by a slip printed (under *Eleusine textilis*, p. 76) 1858, instead of 1868. The reference "Apont. 558" under *Myristica angolensis* (p. 75) should be omitted. The number of Welw. Herb. given on p. 91, line 12 from top, for *Habenaria huillensis* should be 724, not 714.

REVISION OF THE AFRICAN SPECIES OF ERIOSEMA.

By EDMUND G. BAKER, F.L.S.

(Continued from p. 100.)

B. Caules erecti vel suberecti plus minusve virgati. Radices nunc simplices et tenues nunc incrassati et lignosi sed sine tuberibus napiformibus vel fusiformibus pro mea cognitione. Folia trifoliolata rarissime simplicia. Inflorescentia racemosa. Flores parvi vel parviusculi.

⊙ Folia plerumque unifoliata rarius trifoliolata.

5. E. CORDATUM E. Mey. *Com.* 128; Harvey in *Fl. Capensis*, ii. 259.

Hab. Between Gekan and Basche, *Drege*. Port Natal, *Gueinzius*! *Sutherland*! *Krauss*, No. 475! Natal, Inanda, *Wood*, No. 272! (1879); *Gerrard*, No. 211! Zululand, *Mrs. MacKenzie*! Barberton, Saddleback Mt., alt. 4500–5000 ft., *E. E. Galpin*!

Var. β. GUEINZII Harv. *E. Gueinzii* Sonder in *Linnæa*, xxiii. 34.

Hab. Natal, *Gueinzius*, Nos. 27 & 634. Pretoria, *Rehmann*, No. 4610, and Transvaal, No. 4171, are perhaps also referable to this variety.

A plant gathered at Inanda by J. M. Wood in 1881 differs from the one quoted above in having a singularly lax raceme.

E. cordatum has a thick, woody root, and either solitary, ovate, cordate leaves, or elliptic-ovate pinnately trifoliolate leaflets.

In the variety β. *Gueinzii* the leaves are all trifoliolate; the leaflets elliptic-oblong, acute; and the flowers more laxly racemose.

⊙ ⊙ Folia trifoliolata.

* Calyx brevis, sæpissime 1½–2½ lin. longus.

+ Flores sæpissime dense racemosi.

6. E. PARVIFLORUM E. Mey. *Com.* 130; Harvey, *Fl. Cap.* ii. 260; Baker in *Fl. Trop. Afr.* ii. 225; Engler, *Hochgebirgsflora*, 273. *Cytisus glomeratus* Bojer, *Hort. Maurit.* 89. *E. consanguineum* Klotzsch in Peters, *Mossamb. Bot.* 32.

Hab. Masai Highland, Nordkikuyu, *V. Hohnel*, No. 101, ex *Engler's*. Shore of Nyanza, Berkeley Bay, *Scott Elliot*, No. 7069! Mozambique District, Island of Zanzibar, *Bojer*, *Peters*, *Dr. Kirk*! *Hildebrandt*, No. 935! South Africa, Natal, *W. T. Gerrard*! *Gueinzius*! Durban, *J. M. Wood*, No. 193! *Rehmann*, No. 8696! Natal, Inanda, *Wood*, No. 851! Between Omsamculo and Omcomas, *Drege*! Near Omblas, *Drege*. Madagascar, various collectors.

A plant gathered by Dr. Volkens at Tanga, No. 16, is rather lax in the inflorescence.

E. podostachyum Hook. *Fl. Nig.* 314, seems intermediate between *parviflorum* and *spicatum*. *E. Bojeri* Benth., from Madagascar, is allied to the above, but has larger flowers.

7. **E. montanum**, n. sp. Caule erecto virgato striato præcipue superne plus minusve pubescente, stipulis lanceolatis scariosis, foliis trifoliolatis, foliolis ovatis vel oblongis acutis, quam iis *E. parvifolii* majoribus, lateralibus inæquilateralibus, floribus dense racemosis subdepressis, pedunculis foliis longioribus, calyce campanulato dentibus brevibus triangularibus, petalis in sicco luteis, ovario 2-spermo dense rufo-villoso.

Hab. Ndara (Taita) auf dem Gipfel, alt. 3000 ft., *Hildebrandt*, No. 2445! Lower Plateau N. of Lake Nyassa, *Thomson*! Mt. Milanji, alt. 6000 ft., *A. Whyte*, No. 38! Shire Highlands, *Buchanan* (1881), No. 339!; (1891), No. 97! Kilimanjaro, Wiss Station, alt. 1550 met., *G. Volkens*, No. 694! Kilimanjaro, Marangu, alt. 2300 met., *G. Volkens*, No. 827! Nile Land, Karague, *Speke & Grant*, No. 420! (probably).

This plant has generally been referred to *E. parviflorum* E. Mey., but, as it seems to me to differ in several characters, I have separated it under the above name.

Stem erect, virgate, especially above, rufous pubescent. Stipules scarious, lanceolate, acuminate, about ⅓ in. long. Leaves trifoliolate, leaflets 1½ to nearly 2½ in. long, about 1 in. broad, ovate or oblong, acute, the lateral leaflets unequal-sided, below the main nerves and also the secondary nerves rufous pubescent; petiole rufous pubescent, ½–¾ in. long; petiolules short, much shorter than the petiole. Racemes axillary. Peduncles 2–3 times as long as leaves, rufous, pubescent, 3–6 in., floriferous portion 1–1½ in. Flowers larger than in *E. parviflorum*, not so depressed, apparently yellow. Calyx short, 1–2 lines, tube campanulate, finely rufous, pubescent, teeth triangular. Petals 3–4 lines long. Ovary covered with silky mouse-coloured hairs. The flowers are larger than in *E. parviflorum*, and not nearly so depressed; the leaflets are much larger and acute.

8. E. POLYSTACHYUM Baker, *l. c.* 225. *Rhynchosia polystachia* A. Rich. *Fl. Abyss.* i. 231, t. 44.

Hab. Abyssinia, *Petit; Schimper*, No. 708! *Steudner*, No. 57! Sasaga, *Steudner*, No. 128! Between Zanzibar and Uyui, *W. E. Taylor*! South African Gold Fields, *T. Baines*!

Racemes dense, many-flowered. Terminal leaflet ovate-lanceolate, acute, 2–3½ in. long.

A plant collected by Dr. Gregory at Alng'aria, on the Leikipia Plateau, may possibly be a form of this species.

9. **E. macrostipula**, n. sp. Caulis erectus subflexuosus herbaceus canaliculatus angulatus pubescens e radice crasso et lignoso ortus, foliis trifoliolatis, foliolis molliter tenuiter pubescentibus ovatis acutis vel subacutis basi rotundatis, foliolis lateralibus inæquilateralibus penninervatis, stipulis magnis lanceolatis vel ovato-lanceolatis longitudinaliter striatis, racemis terminalibus et axillaribus, floribus dense aggregatis patentibus vel parce depressis, sepalis deltoideis, leguminibus oblongis oblique mucronatis brunneo-villosis.

Hab. Djur Land, Grosse Seriba Ghattas, *Schweinfurth*, No. 2010 et bis!

Stem herbaceous, erect, 1½–2 ft. high, somewhat flexuous, grooved, angled, pubescent, proceeding from a thick woody rootstock. Leaves trifoliolate; leaflets ovate, acute, subacute or rounded, base rounded, especially when young, softly pubescent; lateral leaflets unequal-sided, penninerved, 2½–3½ in. long, 1¼–1¾ in. broad; petiole about 1 in. long. Stipules large, lanceolate or narrow ovate-acuminate, ¾ in. long, longitudinally striate. Racemes ¾–1½ in. long, lateral and axillary; flowers densely aggregated, patent or slightly depressed, just under ½ in. long; calyx about 2 lines long, teeth deltoid; ovary covered with white silky hairs; legume oblong, ⅝ in. long, ¼ in. broad, somewhat tapering to an oblique apiculate point, covered with mouse-coloured villose hairs. The seed is attached at the end of a linear hilum. The leaflets of this plant are large, and 2–3 times longer than broad. The stipules are large and longitudinally striate.

10. E. RADICOSUM A. Rich. *Fl. Abyss.* i. 228; Baker, *l. c.* 226.

Hab. Abyssinia, *Quartin-Dillon.*

The root of this plant is thick, woody, and much developed; the leaflets are elliptical-oblong, and the racemes of 8–12 flowers about equal in length the leaves. Only known to me from a flower and leaf kindly sent from the Paris Museum.

‡ Flores laxiuscule racemosi.

11. E. SPICATUM Hook. f. *Fl. Nig.* 313.

Hab. Sierra Leone, *Don*! *Afzelius*! Gaboon, *Mylne*! Near Lusenuja, *Scott Elliot*, No. 4123! Senegal, *Heudelot*, No. 759!

Stem suberect, about a foot high, sparingly branched. Leaflets ovate or elliptical. Peduncles 4–6 in., floriferous portion 1–2 in.; flowers laxly racemose. Calyx campanulate, teeth very short, triangular.

This plant differs from *E. parviflorum* E. Mey., with which it was united in the *Flora of Tropical Africa*, in its raceme, which is much more lax, and in its legume, which is tomentose, and not pilose.

12. **E. sparsiflorum**, n. sp. Caulis erectus virgatus subligneus inferne teres superne angulatus et pubescens e radice lignoso ortus, foliis trifoliolatis, foliolis anguste oblongis subcoriaceis, foliolis lateralibus inæquilateralibus fere concoloribus apice acutis vel subacutis basi rotundatis vel cuneatis, petiolis brevibus, petiolulisque subæquantibus, floribus racemosis depressis, racemis laxifloris, sepalis triangularibus vel lanceolatis, leguminibus applanatis oblique apiculatis.

Hab. Djur Land, Grosse Seriba Ghattas, *Schweinfurth*, No. 1876!

Stem virgate, erect, subligneous, terete below, angled and pubescent above, 1–1½ ft. high, proceeding from a wiry woody rootstock. Leaves trifoliolate; leaflets narrow-oblong, 2–2½ in. long, ⅓ to rather more than ½ in. broad; lateral leaflets unequal-sided or only slightly so, almost concolorous, apex acute or subacute, base rounded or cuneate, penninerved, underneath veins rufescently pubescent, acute; petiole short, ⅛–⅙ in.; flowers racemose, subsessile, about ⅓ in. long; racemes axillary, lax-flowered; flowers depressed; calyx-teeth triangular or lanceolate, acute, 2–2½ lines long, externally grey-pubescent. Ovary covered with white silky hairs. Legume flat, oblong, obliquely apiculate, rather more than ½ in. long, ¼ in. broad.

Somewhat resembling *E. spicatum* Hook. in its lax inflorescence.

13. E. CAJANOIDES Hook. f. *Fl. Nigr.* 314; Baker, *l. c.*; Engler, *Hochgebirgsflora*, 273. *E. polystachyum* E. Mey. *Com.* 130. *E. floribundum*, *E. macrophyllum*, and *E. incanum* Klotzsch in Peters, *Mossamb. Bot.* 33, 34. *Rhynchosia cajanoides* Guill. & Perr. *Fl. Seneg.* 215.

Hab. *Upper Guinea:* Senegambia, *Perrottet*, No. 215! *Heudelot*, No. 851! Sierra Leone, *Smeathman*! Niger, *Barter*, No. 1119! Cape Coast, *Brass*! Abbeokuta, *Dr. Irving*! Gambia, *M. Park*! Falaba, *Scott Elliot*, No. 5099! *Nile Land:* Nubia, *Noer Binder* (*fide Kotschy*). Djurland, *Schweinfurth*, Nos. 1980! 1548! Bongoland, *Schweinfurth*, No. 2674! Kilimanjaro, *Dr. Meyer* (*fide Engler*). Ruwenzori District, *Scott Elliot*, No. 8078! Uganda, *Scott Elliot*, No. 7285! Tanganyika Reg. Niomkolo, *A. Carson*! *Lower Guinea:* Congo, *Capt. Burton; Fr. Hens*, No. 316! *Chr. Smith*! Angola, *Monteiro*! Chella Mts., *H. H. Johnston*! Distr. Golungo Alto, *Welwitsch*, No. 4095! Distr. Pungo Andongo, *Welwitsch*, No. 4115! Distr. Bumbo, *Welwitsch*, No. 4118! Distr. Huilla, *Welwitsch*, No. 4117! *Mozambique Distr.:* Mozambique, *Dr. Peters.* Zambesi-land, *Dr. Peters; Dr. Stewart*! Shupanga, *Dr. Kirk*! Moramballa, *Dr. Kirk*! Zanzibar Ins., *Hildebrandt*, No. 932! Shire Highlands, *Buchanan* (1881), Nos. 109! 364!; (1891), No. 188! River-bank, Luabo, *Livingstone Exp.*! *South Africa:* Natal, Inanda, *Wood*, No. 1627! Port Natal, *Krauss*, No. 64! Matabele Country, *Dr. Holub*! Crocodile River, *Burke*! Also found in Madagascar, *Baron*! *Hildebrandt*, No. 3088! *Humblot*, No. 592! Central Madagascar, *Baron*, No. 4720! Ste. Marie, *Boivin*, No. 2702!

This plant is probably identical with *Rhynchosia psoraloides* DC. *Prod.* ii. 389, in which case it will have to take the name *Eriosema psoraleoides* Don, *Gen. Syst.* ii. 348.

Stems erect or suberect, 4–5 ft. high, branched, branches softly pubescent, somewhat angular. Stipules minute, lanceolate. Petioles $\frac{1}{8}$–$\frac{1}{4}$ in. long. Leaflets, central one narrow-oblong or oblanceolate, 2–3 in. long, blunt or acute, subcoriaceous, upper surface glabrous or nearly so, under side covered with a soft grey pubescence, petiolule about as long as petiole. Flowers not nearly so densely racemose as in *E. parviflorum*; racemes 2–4 in. long. Pedicels very short. Calyx about 2 lines long; sepals ovate, acute, or subdeltoid, nearly half the length of the calyx. Flowers $\frac{1}{4}$–$\frac{3}{8}$ in. long to even $\frac{1}{2}$ in. Legume ovate, oblong, $\frac{1}{2}$ in. or rather more long by rather less broad, covered with white or brownish white hairs, obliquely apiculate.

I have adopted the name used in the Tropical African Flora for this plant, although this is posterior to *E. polystachyum*, as the use of the latter name would mean a change of name in an allied species.

** Calyx longior, sæpissime 2$\frac{1}{2}$–4 lin. longus.

14. **E. Buchanani**, n. sp. Caulis erectus dense ferrugineo-pubescens ad basin lignosus, foliis trifoliolatis, foliolis ovatis vel ovato-oblongis, acutis basi rotundatis, lateralibus inæquilateralibus, junioribus præcipue subtus veniisque ferrugineo-pubescentibus, floribus dense racemosis, racemis axillaribus et terminalibus, pedunculis ferrugineo-pubescentibus, floribus subdepressis, calyce externe ferrugineo-pubescente laciniis lanceolatis acutis, petalis calyce longioribus, leguminibus ferrugineo-villosis 2-spermis, seminibus nigrescentibus.

Hab. Top of Mt. Zomba, *Buchanan*, No. 214! Shire Highlands, *Scott Elliot*, No. 8611!

Stem erect, about 1$\frac{1}{2}$ ft. high, possibly more, densely clothed with ferruginous pubescence. Leaves trifoliolate; leaflets ovate or ovate-oblong, acute, base rounded or cuneate, not so long as those of *E. polystachyum*; lateral leaflets unequal-sided, pubescent on both surfaces, young leaves and especially the veins underneath ferruginous, pubescent. Flowers in dense terminal and axillary racemes, which are 1$\frac{1}{2}$–2 in. long; peduncles covered with dense ferruginous pubescence. Flowers somewhat depressed; calyx about 3 lines long, externally covered with ferruginous pubescence; sepals lanceolate, acute; petals longer than the calyx, about $\frac{1}{3}$ in. Legume $\frac{1}{3}$–$\frac{1}{2}$ in. long, apiculate when young, ferruginous, villose, 2-seeded; seeds black.

Allied to *E. polystachyum*.

The leaflets are more ovate and shorter; and the peduncles clothed with a more dense ferruginous tomentum, and the sepals and petals rather longer.

There is another plant, collected by Buchanan in the Shire Highlands, No. 339! which is closely allied to the above. The stem, however, is higher (6 ft.), the leaflets more pointed, and the calyx-teeth are triangular and shorter.

Buchanan, No. 117 (1879), is also allied.

15. E. LONGEPEDUNCULATUM A. Rich. *Fl. Abyss.* i. 226; Baker, *l. c.* 227; Engler, *Hochgebirgsflora*, 273. *Rhynchosia longepedunculata* Hochst in Schimp. *Hb. Abyss.* No. 925.

Hab. Abyssinia, "in cacumine montis Scholota," *Schimper*, No. 925! Amba Harres und Addi Bachdanit, *Schimper* (1862), No. 440! Surajata, um 2700 m., *Schimper* (1862), No. 440.

16. E. KRAUSSIANUM Meisn. in Hook. *Lond. Journ. Bot.* ii. 91; Harvey in *Fl. Capensis* ii. 261.

Hab. Grassy places at foot of the Tafelberg, Port Natal, *Krauss*, No. 474 ex parte! Grassy places, Mooi River, Natal, alt. 4000 ft., No. 757! Kaffraria, *Baur*, No. 253! Basuto-land, *T. Cooper*, No. 2186! Natal, nr. Murchison, *J. M. Wood*, No. 3099! East Griqualand, Kokstadt, *W. Tyson*, No. 1534!

Stems erect, angular, 6–8 in. high. Leaflets 1–1½ in. long, oblanceolate or oblong. Peduncles axillary, 4–6 in. long, sometimes rather more, many-flowered. Calyx 2½–3 lines long, covered externally with rufous pubescence. Petals yellow.

17. **E. ramosum**, n. sp. Suffrutex vel fruticulus. Caule erecto elato virgato ramoso angulato præcipue superne brunneo-pubescente, stipulis lanceolatis, foliis trifoliolatis, foliolis angusti-ovatis vel oblongis, apice acutis et mucronatis fere concoloribus penninervatis, foliolis lateralibus æquilateralibus vel fere æquilateralibus, floribus racemosis, pedunculis axillaribus et terminalibus, floribus patentibus vel subdepressis, calyce campanulato externe ferrugineo-pubescente dentibus ovato-lanceolatis acuminatis, petalis luteis calyce longioribus, legumine dense ferrugineo-villoso.

Hab. Angola, Prov. Huilla, in dumetis pascuorum de Morro de Lopollo, *Welwitsch*, No. 4116!

Stem suffruticose, erect, branched, angled, especially above covered with ferruginous or incano-ferruginous pubescence, 1½–2 ft. high, possibly more. Leaves trifoliolate; leaflets narrow, ovate or oblong or oblong-ovate, 1½–1¾ in. long, about ½ in. broad, mucronate at the apex, rounded at the base, penninerved; lateral leaflets equal-sided or almost equal-sided; petiolules short, pubescent, about the same length or slightly shorter than the main petiole. Flowers patent or slightly depressed, in dense terminal and axillary racemes; pedicels very short; calyx externally ferruginous, pubescent, about $\frac{1}{5}$ in. long, segments ovate-lanceolate or lanceolate, about as long as the tube; petals yellow, longer than the calyx, standard oblanceolate, pubescent externally, wings keeled, auricled. Legume when young densely covered with ferruginous-villose hairs, flat, 2-seeded.

This plant is allied to *E. Kraussianum* Meissn., from Natal. The flowers are in dense terminal and axillary racemes, the calyx is externally covered with ferruginous pubescence, and the petals are short.

18. E. ZEYHERI E. Mey. *Com.* 129 (1835–1837). *E. squarrosum* Walp. in *Linnæa*, xiii. 586 (1839). *E. reticulatum β. canescens* Meissn. in *Lond. Journ. Bot.* ii. 80. *Hedysarum squarrosum* Thunb. *Fl. Cap.* 595. *Desmodium squarrosum* DC. *Prod.* ii. 333.

Hab. Grassy field beyond Camtoos River, near Galgebosch, and elsewhere, *Thunberg.* Zwartkops and Vanstandens River, and Adow Ait, *Ecklon & Zeyher.* Zuurebergen, alt. 1200–2000 ft., *Drege*! Zwartkops River, *Drege*! Slaay Kraal, *Burke & Zeyher.* South Africa, sine loc., *Masson*! Van Stadensberg, alt. 800 ft., *MacOwan*, No. 475! Brookhuizens Poort, *MacOwan*! *Burchell*, Nos. 5262! 4042! 4155! 4002! 4573! Natal, *T. Gerrard*! Kaffirland, *Dr. Gill*!

Leaves white beneath, 1½–2 in. long, ½ to rather over ¾ in. broad.

Var. β. ACUMINATUM. *E. squarrosum* var. *acuminatum* (E. & Z.) Harv. *l. c.* 266.

Hab. Winterberg, *E. & Z.; Bowie.*

Var. DREGEI = *E. Dregei* E. Mey. *Com.* 129. *E. squarrosum* var. γ. *Dregei* (Benth.) Harv. *l. c.*

Hab. Omsamculo, *Drege.* Port Natal, *Gueinzius.*

Var. LATIFOLIUM (Benth.). *E. squarrosum* var. δ. *latifolium* Benth.; Harv. *l. c.*

Hab. Natal, *Gueinzius*! *J. M. Wood*, No. 3139! *Gerrard*, No. 559! Zululand, *Mrs. MacKenzie*! Pondoland, alt. 1000 ft., *W. Tyson*, No. 2834!

*** Calyx longissimus 4–6 lin.

+ Foliola ad apicem acuta vel apiculata.

19. E. SHIRENSE Bak. fil. in *Trans. Linn. Soc.* Ser. 2, iv. 11, c. tab.

Hab. Mt. Zomba, *A. Whyte*, No. 31! Nyassaland, *J. Buchanan*, Nos. 312, 1350 (1891)! Mt. Milanji, *Scott Elliot*, No. 8614!

Leaflets concolorous, 3½–4 in. long, ½ in. or rather more broad.

20. E. BURKEI Benth. in *Fl. Capensis*, ii. 260.

Hab. Magaliesburg, *Burke & Zeyher*! Transvaal, Pretoria, colles supra Aapes river, *Rehmann*, No. 4372! Wonderboompoort, No. 4609!

The stems of this plant are covered with a rusty pubescence.

E. reticulatum E. Meyer, *Com.* 129, I do not know; it is possibly allied to the above.

21. E. SALIGNUM E. Mey. *Com.* 129; Harv. *l. c.* 261.

Hab. Magaliesburg, *Burke & Zeyher*! Kokstadt, Griqualand East, *W. Tyson, Herb. Normale*, No. 520! Near Grahamstown, alt. 2000 ft., *MacOwan*, No. 270! Barberton, *E. E. Galpin*, No. 1140! Natal, *Sanderson; Krauss*, No. 474! *T. Williamson; W. T. Gerrard*! Inanda, *Wood*, No. 452! Durban, *W. Molyneux*! Hill near Bothas, alt. 2200 ft., *Wood*, No. 5016! British Kaffraria, *T. Cooper*, No. 293! Zululand, *Mrs. MacKenzie*!

Leaflets silky white beneath.

Var. β. CONCOLOR Harv. *l. c.*

Hab. Natal, *Sanderson*!

A specimen gathered by W. T. Gerrard in Zululand, No. 1097, is also probably this species.

++ Foliola ad apicem obtusa vel rotundata vel subacuta.

22. E. OBLONGUM Benth. in *Fl. Cap.* ii. 259.

Hab. Aapjes River, *Burke & Zeyher*! Barberton, banks of

Queen's River, alt. 2300 ft., *E. E. Galpin*, No. 1138! Tropical South Africa, *T. Baines*! Zambesi, Leshumo Valley, *Dr. Holub*, No. 499! Mt. Milanji, *A. Whyte*!

A plant collected by Schweinfurth in Niamniam-land, No. 2908, will probably have to be referred to this species.

23. ***E. andongense** Hiern MS. in Herb. Mus. Brit. Radice lignea, caulibus erectis elatis plus minusve brunneo-hirsutis, stipulis lanceolatis, foliis trifoliolatis, foliolis oblongis sæpissime obtusis et apiculatis ad basin obtusis vel rotundatis fere concoloribus præcipue subtus molliter brunneo-pubescentibus, foliolis lateralibus inæquilateralibus, petiolis petiolulisque brunneo-hirsutis, floribus capitato-racemosis, calyce petalis subæquilongis, sepalis lanceolatis acuminatis tubo longioribus, legumine oblongo applanato oblique apiculato sericeo-villoso.

Hab. Angola, Distr. Pungo Andongo. In wooded pastures at Sansamanda, Pedras de Guinga, in flower and fruit in April, 1857, *Welwitsch*, No. 4119!

The following plant, with yellow flowers, is much like this species in general appearance, but differs by having rather larger flowers and shorter calyx.

Distr. Huilla. In thickets annually burnt near Humpata, in the descent from Morro de Lopollo; sparingly in flower and fruit in December, 1859, *Welwitsch*, No. 4120.

Rootstock woody. Stems several, woody at the base, about $1\frac{1}{2}$ ft. high, tawny with hirsute tomentum above, leafy. Leaves trifoliolate; petiole $\frac{1}{5}$–$\frac{1}{3}$ in. long, hairy like the stem; leaflets oblong, mostly obtuse and apiculate at the apex, obtuse or rounded at the base, subcoriaceous, $\frac{1}{4}$–$\frac{3}{4}$ in. long, $\frac{1}{3}$–$\frac{5}{6}$ in. broad, pubescent and with depressed venation on the upper surface, subtomentose on the under surface, the terminal leaflet on a petiolule of $\frac{1}{8}$–$\frac{1}{3}$ in., which is usually bent near the apex, lateral leaflets unequal at the base, subsessile, rather smaller than the terminal leaflet. Stipules lanceolate, gradually setaceous towards the apex, hairy at the back, glabrous and striate within, $\frac{3}{8}$ in. long; stipules 0 or fugacious. Inflorescence dense, pedunculate, in the upper axils, subcapitately racemose, about $\frac{3}{4}$–1 in. diam.; peduncles hairy like the stem, 1–2 in. long. Flowers $\frac{3}{8}$ in. long, subsessile or sessile. Calyx as long as the corolla, deeply 5-lobed, densely shaggy outside, glabrous inside, lobes all narrowly linear-lanceolate, gradually setaceous towards the apex. Pods 2-seeded, compressed, $\frac{5}{8}$ in. long, $\frac{3}{8}$ in. broad, shaggy outside; seeds $\frac{1}{6}$ in. long, $\frac{1}{8}$ in. broad.

This species is closely allied to the preceding, *E. oblongum* Benth. The stem, however, is longer, the leaflets rather larger, inclined to be more pointed. If it should be found to be advisable to consider it as only a variety, it may be called var. *andongense*.

(To be continued.)

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* In the case of this plant, and the other Welwitschian novelties to be described, the English portions of the descriptions have been drawn up by Mr. W. P. Hiern.

AMERICAN NOMENCLATURE.

[The absence of recent comment in these pages upon the vagaries indulged in by certain American botanists has not been due to want of material for notice, but rather to its excess. We have also felt that it would not be in the interests of science that space which might be occupied with more useful matter should be devoted to the consideration of schemes which are amended by their proposers sometimes simultaneously with their publication. We are, however, glad to find that the reaction towards saner principles of nomenclature to which we called attention on p. 19 is spreading, as an evidence of which we reprint a portion of the excellent criticism of the *List of Pteridophyta and Spermatophyta of North-eastern America* prepared by the Nomenclature Committee of the Torrey Botanical Club, contributed by Mr. B. L. Robinson to the *Botanical Gazette* for March. We have not ourselves received a copy of the *List*, so that we are unable to review it, but Mr. Robinson's answer to the question, "Is the new system one which possesses the elements of permanency?" is amply sufficient.]

It is one of the principal arguments for the stability of the proposed code that it is a *rigid* one, which permits no exceptions, and, to use an expression of a leader in nomenclature reform, "leaves nothing to individual judgment." It is well known, however, to every working botanist that even the selection of the first specific name, after the still more difficult choice of the generic, involves a constant exercise of judgment of the most critical sort, both as regards the exact application of brief and unsatisfactory descriptions and the often doubtful priority of publications. Even the form of the name is sometimes subjected to individual judgment or arbitrary modification in the new system as well as the old, as an illustration will show. It has occurred to a number of writers that the sweet alyssum, common in cultivation, should be separated as a distinct genus. The history of its synonymy is as follows:—Upon page 420 of his *Familles des Plantes*, in 1763, Adanson sets up the genus *Konig*, founded upon *Clypeola maritima* L. (*Alyssum maritimum* Lam.), with little description, and largely by referring by number to the species of Linnæus. In 1814 Desvaux, also of the opinion that the Lamarckian *Alyssum maritimum* should be separated from the other Alyssums, carefully described it under the correctly latinized name *Lobularia*. In 1826 Robert Brown revived the name *Konig*, modifying it to *Koniga*, and dedicating the genus to a friend, then curator of the British Museum, whose name by a strange chance was Konig (anglicized from König). In 1891, Prof. Prantl, revising the *Cruciferæ* for the *Nat. Pflanzenfamilien*, wisely selects as the correct designation of the genus the first properly latinized name *Lobularia*. Now Prof. Britton takes a rather singular course by pronouncing Adanson's *Konig* a misprint for *Koniga*. This action is entirely unwarranted by fact, both from the circumstance that *Konig* occurs in the same form several times in Adanson's work, and on account of that author's well-known disregard for latinization. Prof. Britton takes this as an entirely arbitrary expedient for setting up a name which would otherwise, from its uncouth form, be deservedly neglected. But what must be the outcome of such arbitrary actions as this? Is nothing here left to individual judgment? How can Prof. Britton be sure that *Konig* is a misprint for *Koniga*, and not for *Konigus*, *Konigium*, or *Koniganthus?* Is it likely that other authors will agree upon this point? But this is not all. If Prof. Britton may coin from an unlatinized word a generic name, how may an erratic writer be prevented from taking up any vernacular name from English or German, Dutch or Russian, if, having discovered its use in some work of the last century, he only pronounces it a misprint, and by the ready addition of an *us*, *a*, or *um*, uses it to displace a later generic name? A system which upon the precedent of its chief exponent permits such vagaries as this is certainly not likely to have the desired stability.

The choice of *Koniga* as the earliest generic name is noteworthy as illustrating another point. It will be remembered that at Madison special legislation was demanded and secured to establish the so-called principle of priority by position, according to which, if two genera or two species are published in the same work, and subsequently united, the name standing first in the book is the authorized one, there being no difference in the time of publication. Now, although *Konig* is used on the 420th page of Adanson's work to designate the sweet alyssum, that author states in an erratum that the reader is to substitute for *Konig*, *Aduseton*. A radical reformer might, it is true, refuse to Adanson the right to take back a name once published, but the peculiar feature of this case is that the errata of this work, while doubtless written after its completion, have been uniformly bound in front of the regularly numbered pages; at least such is the case in the three copies of the work accessible to the writer. Thus Adanson's correction, advocating *Aduseton*, has many pages of what Prof. Britton has termed priority of position over the description of *Konig*.

The case is interesting merely as a good instance of many in which zeal in searching for the earliest designation leads to the consideration of names so involved that several interpretations are equally possible. In passing it may also be noted that Prof. Britton's *Koniga maritima* is long antedated by the same combination by Robert Brown, a writer whose works the reforming botanists can scarcely afford to overlook.

It will be generally admitted that a system of nomenclature is unsatisfactory in which the botanist who characterises and names a new species with all due care that he is not duplicating an existing name, nevertheless cannot be at all sure but that the name so carefully chosen may at once be displaced through no fault of his. Yet such is the case under the Rochester and Madison rules. When Nuttall made the combination *Chrysopsis pilosa*, it was a new binomial applied to a good new species evidently belonging to the genus under which it was placed, and never before described in this or any other genus. Can any author hope in describing a species in the future to do better than this? Under the long-established usage of conservative botanists such a name would be inviolable; under the Madison rules, however, Prof. Britton is able to displace it by combining the same specific name with the same generic, but to designate an entirely different plant, namely, *Chrysopsis pilosa* Britton (*Erigeron pilosa* Walt.), making thereby a most useless and pernicious synonym of Nuttall's name, which has every right to stand.

It is not the special case that is here important, but the general principle, which permits such changes, and will continue to permit them in the future. The upheaval of nomenclature under this law will not cease even when most of the obscure names of the past have been sought out. It will always be possible for a botanist through perfectly conscientious work to readjust generic lines so that species of the same specific name are thrown together. In such cases, under the prevalent usage, that species which was already under the genus retained stands fast. But according to the Madison rule, as we have just seen, if the species brought into the genus chances to have an older specific name than the species already in the genus, both plants are to be re-named instead of only one. It does not seem to have occurred to the reformers that this ruling, far from being conducive to stability, would, especially when combined with another of their dicta, give perpetual opportunity for change, since it will always be possible for an erratic botanist to throw together large genera like *Aster* and *Erigeron*, *Bidens* and *Coreopsis*, *Panicum* and *Paspalum*, thereby displacing many specific names, which, according to the rule of "once a synonym always a synonym," can never be revived! This outcome seems so preposterous that it must be stated that it is not merely the writer's own unauthorised interpretation, but the distinctly expressed although unpublished view of one of the compilers of the list, who has been among the foremost in the cause of nomenclature reform.

It is impossible here to criticise in detail the bibliographical work in the list. It is well known that it has been done gratuitously by those who, pressed with other duties, could ill afford the time, so that slips may well be overlooked. Nevertheless it must be confessed that it is disappointing to find such obvious evidences of haste, not to say carelessness, in this regard. Why, for instance, should *Iodanthus pinnatifidus* be ascribed to Prantl when it was used long ago in Steudel's *Nomenclator* (with synonym), again by Gray in the Proceedings of the American Academy, again by Watson in the Botany of the King Expedition? The fact that Prantl himself was ignorant of these earlier publications is but a poor excuse for an American botanist well armed with Watson's *Bibliographical Index* or the recently issued *Index Kewensis*, in both of which the combination is cited. Or why should the place of publication of Celakovsky's genus *Stenophragma* be given as *Oesterr. Bot. Zeitschr.* xxvii. 177, when there is merely a review by Dichtl of Celakovsky's *Flora von Böhmen*, while the publication of the genus was not even in this latter work, but some years before in the Regensburg *Flora?*

However, every one should be aware of the great difficulty of freeing such a list from errors of this kind.

A more significant fact in regard to the work is the number of changes of name which have resulted from readjustment of generic lines, and from a modified conception of the dignity of the species. It cannot fail to strike the botanist who glances over this list that many of its species are founded upon plants which by such experienced botanists as Hooker, Gray, Watson, and others, have generally been regarded as varieties. Of course it is not denied that the reverse case often obtains. A corresponding change (and here a distinct depreciation) in the dignity of the variety is shown by Prof. Britton's many "albifloras," covering forms of which Dr. Gray, in a letter recently published, wrote, "When the new edition of the Manual comes out, it will have a *nota bene:* Expect a white-flowered state of every coloured species. They are sure to turn up sooner or later. And I find it no good, therefore, to say var. *alba* over and over." If it should be urged that, upon the basis of former publications, *Gerardia purpurea albiflora* Britton, *G. tenuiflora albiflora* Britton, *Gentiana Andrewsii albiflora* Britton, &c., are to be regarded merely as forms, and not as varieties, it may be asked whether the trinomial system adopted in the list has not a considerable defect if it cannot indicate the difference between a well-marked variety and a mere form. Whether the naming of forms is at present desirable may well remain an open question, but there can be no doubt that such a course is a general tendency of exhaustive systematic study, and accordingly a style of nomenclature in which there is no distinction between subspecific, varietal, and formal differences is likely to appear to future botanists a rather clumsy tool. However, to return to the interpretation of groups, I would not be taken as even hinting that every botanist has not a perfect right to put his own construction upon the limits of genera, species, and varieties. But it should be apparent to those sanguine supporters of reform, who hope to derive stability from it, that here again everything depends upon individual judgment, and must always do so.

In the light of what has been said, it seems sufficiently evident that the new system, far from furnishing a satisfactory solution to the nomenclature question, fails even to offer such substantial advantages over the existing system as greater clearness and prospect of permanency, for which alone working botanists could afford to make such sweeping changes in their language.

SHORT NOTES.

COCHLEARIA MICACEA Marshall IN SHETLAND.—A small plant collected by Mr. W. A. Shoolbred in 1892 at Baltasound, Unst was sent for me to grow, last spring, as it had failed to bloom in his garden. It produced a number of procumbent flowering-stems, enabling me to dry a good number of specimens. This I place under the species recently published in these pages. It had to be gathered rather too early, the fruit not being ripe; some of the pods show slight traces of reticulate veining, but this may be due to shrinkage, and therefore merely apparent. Mr. Hanbury has lately sent me specimens of the plant which I believe to be true *C. groenlandica* L., from The Heogs, Unst.—EDWARD S. MARSHALL.

PYRUS LATIFOLIA Syme IN E. ROSS.—In *Journ. Bot.* 1893, p. 231, I reported *P. torminalis* from the Conan River. At that time I possessed no specimens of *P. latifolia*, and did not know the plant. Recently, when laying in a sheet of the latter, I at once saw that the Ross-shire plant was identical with it. Only one tree was met with (a remarkably fine specimen in good fruit), so that its nativity must be considered very doubtful, although it was not an obvious introduction.—EDWARD S. MARSHALL.

ARABIS PETRÆA Lamarck.—Lamarck describes his *Arabis petræa* in the *Encyclopédie Méthodique*, i. 221. He says the leaves are "sinuées, presqu'en lyre, à dents ou décompures obtuses, vertes, glabres, et quelquefois légèrement ciliées à leur base. . . . J'ai trouvé cette plante en Auvergne, sur les pentes sèches des montagnes." He gives as synonyms *Cardamine petræa; cambrica, nasturtii facie*, Dill. *Elth.* 70, tab. 61, f. 71, and *Cardamine petræa* L. There appears to be considerable doubt whether the plant from the Auvergne is identical with the plant of the *Species Plantarum*, which is, I believe, represented in the Linnean herbarium by *A. petræa* var. *fœroensis* of DC. *Syst.* ii. 230, and is figured under the name *Cardamine fœroensis* in *Fl. Danica*, t. 1392 (not 1382, as given in the *Systema*); or with the plant discovered on Snowdon by Thomas Johnson, which is *A. petræa* var. *hispida* of DC. *Syst.* This hairy form was mistaken for *Sisymbrium arenosum* by Linnæus (*Flor. Suec.* ed. 2, 233). It appears highly probable that the plant from Auvergne described by Lamarck is a form of *Sisymbrium arenosum*, since *Arabis petræa* is not recorded from France in Nyman's *Conspectus*, or in any Flora of France that I have consulted. I thought an examination of the herbarium of Lamarck might throw light on the subject. For many years his herbarium was at Rostock—I believe, in the possession of Prof. Roeper—but it has now been added to the herbarium in the Jardin des Plantes, where I had recently an opportunity of examining it. It is kept separate from the general collection there (as is the case with the herbaria of Tournefort, Michaux, &c.). I looked through the *Cruciferæ*, but was unable to find a specimen of *Arabis petræa*. I may say that the specimens of Lamarck are not mounted, but are kept loose in the old covers. Very few localities are given. *Arabis petræa* is a polymorphic species, but I should be inclined to keep separate as a subspecies the *A. Crantziana* of Ehrhart, which is figured in Reichenbach's *Icones Fl. Germ. et Helv.* ii. fig. 4323. I have seen an authentic specimen, which has the long, narrow pod, as figured there. It is more correctly called *A. hispida* Mygina. Crantz mistook it for *A. Thaliana*. This species has not, so far as I am aware, been found in Britain.—G. C. DRUCE.

Mourera fluviatilis Aubl. — During a journey up the river Essequibo and its tributary, the Potaro, from Bartica Grove to the Tamatamari Falls, I had an opportunity of studying this most interesting plant. The only way of ascending this river is in an open boat, paddled by about twenty negroes; and as at the many rapids great delay occurs, during the dry season especially, there was ample time for close examination of the plants; it would be difficult, too, to reach them from the shore, as they occur most frequently in mid-stream, and are thus easily reached by swimming from the boat attached to a rope. Nearly all the water plants in the Essequibo belong to the *Podostomaceæ*, *Rhyncholacis hydrochicorium* Tul. and *R. macrocarpa* Tul. being the most abundant, if one may judge by their dried-up remains on the rocks that are covered only at high water. These plants are confined entirely to the rocks above extreme low water, whilst *Mourera fluviatilis* is restricted to a space of two or three feet below extreme low water, as it would be fatal to the plant to be exposed to the air. The rise from low to high water during the rainy season is very great, and at highest water the *Mourera* would be from ten to twelve feet below the surface. It is attached to the rocks very firmly by means of a kind of thallus; the leaves are thick and succulent, from 12 to 18 in. long, resembling gigantic salad-chicory leaves, but of very beautiful tints of red-brown and olive-green; it is very surprising to see leaves of this character existing only in the most rapid parts of the stream. As the water falls at the end of the rainy season, and reaches within about two feet of extreme low water, the *Mourera* begins to throw up its flower-spikes to a height of 18 in. to 2 ft.; the water still falls, the tips are exposed, and flowering commences, and, as the flowering is from above downwards, by the time extreme low water is reached the uppermost fruits are quite ripe and ready to discharge their seeds. This must be done during the time the water is at the lowest, for, as I before remarked, the plants exist only on quite a narrow strip below extreme low water. The seeds appear to fall on the rocks on the space just above low water that is kept moist by capillary attraction, and they within a few hours become covered with a gelatinous coating which enables them to stick firmly to the rock till they are rooted. Growth is very rapid indeed, as at the time of my visit there were still some plants in flower and also an abundant crop of seedlings that had grown from the ripened seed. Processes are apparently thrown out very much in the way of stolons, which enable the plant to gradually creep to below low-water level into the space in which only it is able to exist. The larger plants were all at the greatest depth, and appeared to be annuals or perennials according to the fall of the water; after flowering they invariably die.—Thomas B. Blow.

Flora of Dorset (p. 121).—In the notice of the 2nd ed. of the *Flora of Dorset* it is said, "Some transference of names may puzzle future students of the *Flora*," and *Fumaria parviflora* is cited as an instance, which I think is the only one in the volume. I relegated the Parley plant under that name to *F. muralis* in the second edition, it having been erroneously placed there in the first.

I regret I did not know of Stillingfleet's *Lepidium Smithii* in the Dillenian Herbarium, Oxford, as a Dorset record at that early date would have been a valuable addition. It is not an uncommon plant in the Poole basin. Mr. Newbould several times assured me he had found *Cerastium pumilum* in Dorsetshire. *Œnanthe silaifolia:* The Dorsetshire specimens of this plant in my herbarium confirm the view that the flowering season here is in May and June; in the south of France it is much later. *Arctium nemorosum* Lej. in Lange's Handbook takes the chief place, *intermedium* the subordinate one, and is named by him as a synonym. *Sparganium affine* Schinz: I consider Pulteney's plant to be more likely this species than *S. minimum.*—J. C. Mansel-Pleydell.

Galeopsis Ladanum L. — This name stood in the 7th ed. of the *London Catalogue* for our common species, as also in Bab. *Man.* ed. 8. In Syme, *E. B.* (ed. 3, vol. vii.) it stands as an aggregate, and "*G. Ladanum* Linn. hb." is given as a synonym of *G. intermedia* Vill. In the *Student's Flora* it is the same, only *G. Ladanum* Linn. Hb. replaces *G. intermedia* Vill. In *Lond. Cat.* ed. 8, *G. Ladanum* L. represents not the aggregate, but *G. Ladanum* Linn. Hb. (= *G. intermedia* Vill.), though by a slip the comital number for the aggregate, *viz.* 63, was added to this; an error which was corrected in the reprint of 1890, when a query was substituted for the comital number. The 9th ed. follows the reprint exactly, no attempt being made to give the distribution. *G. angustifolia* Ehrh. of the 8th and 9th eds. = *G. Ladanum* L. of the 7th ed., and includes *G. canescens* Schultz, which is a form rather than a variety (see a note by Mr. Druce, *Journ. Bot.* 1887, 313). The rare plant, which I think is best distinguished as *G. intermedia* Villars, since there is so much confusion about the sense in which *G. Ladanum* L. is to be taken, is given by Syme for Moray, by Hooker in the *Student's Flora* for Moray and Denbigh; as an introduced plant of cultivation I can add Dorset. Is it anywhere in Britain otherwise than an introduced plant? and does it occur in any other county? My object in writing, however, is not so much to work out the distribution, as to endeavour to clear up a confusion which I suspect would find illustration in many British herbaria.—Edward F. Linton.

NOTICES OF BOOKS.

Muscologia Gallica: Descriptions et figures des Mousses de France et des contrées voisines. Par T. Husnot. 1884–1894. Cahan, par Athis (Orne), T. Husnot. Pp. x, 458; tabb. 125. 70 Fr.

The study of mosses is evidently in a very flourishing condition among our neighbours across the Channel. What with the publication of Schimper's *Synopsis*, edition ii. (1876), the Abbé Boulay's *Muscinées de la France* (1884), and the present work, there remains but little for the most exacting of moss-students to pray for. The two former works are, it is true, not illustrated; but that omission has now been remedied by M. Husnot. This botanist, already well known as editor of the *Revue Bryologique*, and as author of numerous cryptogamic and other publications, including extensive sets of *exsiccati*, chiefly cryptogamic, of France and of the French Antilles, has during the last eleven years been diligently engaged in the production of what will doubtless prove to be the most enduring of his contributions to Science. In heartily congratulating him upon the successful completion of his labours, one has much pleasure in noting as evidence of the high esteem in which the *Muscologia Gallica* is held in France, that the "ouvrage" has been "couronné par l'Académie des Sciences."

The first features that one notices when glancing through the book are that the descriptions are in French and printed in large type, and that every species is illustrated. There is an abundance of illustrations, and they were all lithographed by the author. Indeed, with the exception of those of *Orthotrichum* and *Harpidium*, the original drawings were all made by M. Husnot himself. A figure (natural size) of the plant is given, and the leaves, capsule, peristome, leaf-tissue, &c., are sufficiently enlarged. But, unfortunately, the degree of magnification is not stated, and this I hold to be a great mistake. It would have been so easy to add the necessary information by means of a number alongside each figure, and the gain to the student would have been out of all proportion to the small additional labour involved. As it is, I fear that the young student will blunder along in uncertainty for months before he happens to light upon the meagre information afforded by a note on p. 253 to the effect that in the preceding genera the leaves are enlarged twenty times, but that in *Mnium* and some of the following genera they are enlarged five or ten times. The average length of the leaves is often mentioned in the specific descriptions, and then we have a clue to the magnification of the leaves in the corresponding plate. But the size of the leaf-cells remains an unknown quantity. Definite information, however, in this respect in case of *Orthotrichum* and *Harpidium* is to be found on pp. 155, 367.

M. Husnot has described 142 genera, and apparently nearly 700 species. The precise student is recommended to ascertain for himself the exact number of the latter; the mathematically-minded may base a calculation upon the average number of species figured on each plate, which is between five and six. The author has not limited himself to the known moss-flora of France, but has included those species which occur in neighbouring countries, and are likely to turn up in France sooner or later. In adopting this course he has shown much wisdom, and has already been justified in case of several species for which he has been able to quote French habitats in his Supplement. *Zygodon Stirtoni* and *Ulota intermedia* will serve as instances of this. Some of our British genera are still *desiderata* in France, e. g. *Daltonia*, *Hookeria*, *Myurium*, *Oedipodium*, and *Stylostegium*. On the other hand, we lack such continental genera as *Bruchia*, *Voitia*, *Metzleria*, *Conomitrium*, *Pharomitrium*, and *Fabronia*.

The nomenclature adopted is that which prevails in most bryological households, *viz.*, that of Schimper's *Synopsis*, edition ii., with a few alterations, e. g. *Plagiobryum* in place of the preoccupied *Zieria*. Deviations from the customary systematic arrangement are to be noted in case of *Archidium* and *Voitia*. The first of these, so anomalous in the structure of its sporophyte, is, on account of its vegetative similarity, placed next to *Pleuridium*. *Voitia*, on the other hand, though resembling the *Splachnaceæ* in vegetative structure, is placed next to *Bruchia*; and this latter, approaching *Trematodon* in the form of its sporophyte, is classed with the cleistocarpous genera *Pleuridium* and *Phascum*, on account of its indehiscent capsule and vegetative similarity.

The *Sphagnaceæ* are nowadays regarded as a separate branch of the *Muscineæ*, the study of which is usually relegated to the well-known specialist, Dr. Warnstorf. They are omitted from the present work. On the other hand, two very difficult groups—the genus *Orthotrichum* and the *Harpidium* section of the genus *Hypnum*—are most elaborately treated by eminent specialists. M. Venturi has made himself responsible for *Orthotrichum*, and has produced a most exhaustive monograph of all the species and varieties that occur in Europe, and has included some that are found in outlying regions—in all, forty-two species; and has drawn the excellent figures that illustrate his minute and exact descriptions. A new species—*O. caucasicum* Vent.—will be found on p. 176. For a proper study of the capsules of dried specimens, M. Venturi says that it is indispensable to soak them in water for half a day. I venture to think, however, that this time could be considerably reduced by the application of gentle warmth. At any rate, it is sufficient to soak the capsules of most mosses for half an hour in tepid water on a steam radiator, and even the leaves of *Dissodon* and the thallus of such hepatics as *Cyathodium* soon recover under this treatment.

The subgenus *Harpidium* has been contributed by M. Renauld, who has based his text and drawings upon original types. The difficulty presented by the group is due to the infinite variability of its members, owing to local conditions, and the absence of fixed characters by which they might be classed. In order to avoid breaking natural affinities, M. Renauld has preferred to place in relief the most widely diffused forms, and to group around and between them the innumerable intermediate forms. Thus he has maintained six species of the first rank, four of the second rank, and varieties and forms too many to count. All the forms of France and of neighbouring countries, and some from N. America, are included. Every one who has occasion to investigate this troublesome group will find M. Renauld's descriptions and plates to be a *sine qua non*.

There are several other points upon which I should have liked to touch, but, with a view to economising the space and time at my disposal, I must limit myself to a few brief references. Under *Fontinalis* the seven or more species of most authors are reduced to three. The species of *Rhynchostegium* are transferred to *Eurhynchium*.

Amblystegium has undergone revision, and has annexed *Hypnum filicinum*. *Thuidium decipiens* De Not. must be sought for under *Hypnum Notarisii* Boul., in the section *Cratoneuron*. I am not aware of the description of any new species, save the *Orthotrichum* quoted above. *Didymodon Camusi*, sp. n. (p. 80), is suppressed in the Supplement, as it turns out to be *Diphyscium foliosum* var. *acutifolium*. Among misprints I notice that "*piriforme*" and "Braithwaite's Moos-Flora" occur several times. Schimper's error in quoting *Tortula vinealis* var. *nivalis* Spruce as var. *glacialis* is copied under *Geheebia gigantea*. Owing to insufficient lettering of plates 17 and 125, *Brachyodus trichodes* and *Blindia trichodes* are likely, from their close affinity, to cause confusion among inexpert students.

Valuable as M. Husnot's addition to bryological literature and iconography undoubtedly is, it might have been made even more satisfactory by fuller bibliography and synonymy, by a glossary, and (as already stated) by definite notification of the degree of enlargement of the figures.

A. Gepp.

Cellulose; an outline of the Chemistry of the Structural Elements of Plants with reference to their Natural History and Industrial Uses. By Cross and Bevan. 8vo, pp. 320; with 14 plates. London: Longmans & Co. 1895. Price 12s. net.

This book is what it professes to be—a bringing together of "the scattered contributions of investigators, with more especial reference to the work of the past fifteen years." It either tells all that is known about the chemistry of cellulose and its derivatives, or sends us to the original papers for full details; and though necessarily of a very special nature, contains useful hints for the broader-minded plant-physiologist. The subject matter falls into three parts. Part i. deals with the typical cellulose and the cellulose groups, *i.e.*, what the botanist calls "cellulose." In Part ii., on "Compound Celluloses," are considered those substances resulting from the processes commonly known as lignification, suberisation, and conversion into mucilage. Part iii., "Experimental and Applied," contains valuable hints on method, and supplies stimulus to more extended research. The "applied" portion is of a more general interest. *Apropos* of paper, the authors regret that there is in this country (and we might surely add, on the Continent) no public opinion on the subject of paper in use for books and records. Those, at any rate, which have more than a passing value should be committed to pages suitably resistant both to chemical and mechanical wear and tear, that is, to those composed of the normal and resistant celluloses only; *e.g.*, cotton and linen, and not to those of which oxy-compounds, like wood-celluloses or esparto- and straw-celluloses, form part, or which contain in admixture with the above ligno-cellulose in the form of wood pulps. Messrs. Cross and Bevan have had their own book printed "upon a paper carefully selected, as composed of the normal celluloses," and the excellency of the result justifies their choice.

The fourteen plates, reproduced from photographs of sections, are to illustrate the general features of structure and arrangement

in the plant of typical raw materials. They are, however, unsatisfactory, and the explanation accompanying each is most inadequate.
A. B. R.

ARTICLES IN JOURNALS.

Annals of Botany (March).—G. Massee, 'Revision of *Cordyceps*' (2 pl.). — P. Groom, 'A new Saprophytic Monocotyledon' (*Protolirion* Ridley, gen. nov.: 1 pl.).—F. W. Keeble, 'The hanging foliage of certain tropical trees' (1 pl.). — W. C. Worsdell, 'Comparative Anatomy of *Christisonia*' (2 pl.). — L. A. Boodle, 'Spores in *Tempskya* (*Endogenites*).' — W. B. Hemsley, 'New plants from Eastern Asia' (2 pl.).

Bot. Centralblatt (No. 13). — O. Chimani, 'Ueber Bau und Anordnung der Milchröhren' (concl.). — (No. 14). T. Bokorny, 'Ueber den Einfluss des Calciums und Magnesiums auf die Ausbildung der Zellorgane.' — (No. 15). H. Siegfried, 'Neue Formen und Standorte schweizerischer Potentillen.'—(No. 16). M. Behm, 'Zur anatomischen Charakteristik der Santalaceen.'

Bot. Zeitung (April 16). — P. Zenetti, 'Das Leitungssystem im Stamm von *Osmunda regalis* und dessen Uebergang in den Blattstiel' (1 pl.).

Bull. de l'Herb. Boissier (March).—N. Alboff, 'Plantes nouvelles de Caucasie.' — J. Freyn, 'Orientalische Pflanzenarten' (cont.).— R. Chodat, 'Histoire des Protococcoidées.'—Id., '*Polygalaceæ* novæ vel parum cognitæ.' — Id., '*Trigoniastrum*.' — Id., 'Structure anormale de la liane *Pachyrhizus montanus*.' — A. M. Boubier, 'Anatomie systématique des Rapateacées.' — F. Kranzlin, 'Zwei neue Orchideen aus Kurdistan.'

Bull. Soc. Bot. France (xlii. pt. i.: March).— —. Molliard, 'Sur le sort des cellules antipodes chez *Knautia arvensis*.'—M. Gandoger, 'Voyage botanique aux Picos de Europa.' — P. van Tieghem, 'Les Loranthoidées de la Nouvelle-Zélande.' — A. Chatin, 'Truffe (Domalan) de Smyrne.' — L. Trabut, 'Résistance d'un *Penicillium* au sulfate de cuivre.' — L. Géneau de Lamarlière, 'Flore des côtes de la Manche.' — E. Prillieux, '*Ustilago Sorghii*.' — J. de Seynes, 'Iconographie Mycologique de Delile.' — A. Le Grand, 'Les *Isoetes* du Centre de la France.' — W. Russell, 'Inflorescence anormale' (*Brassica oleracea*). — E. Gain, 'Quantité des substances solubles dans les végétaux.'

Bull. Torrey Bot. Club (Mar. 27). — Memoir of J. Bernard Brinton (Aug. 16, 1835–Dec. 6, 1894: portrait). — V. Havard, 'Food Plants of N. American Indians.' — L. M. Underwood, 'Classification of Archegoniates.'

Erythea (April 1).—E. L. Greene, 'Phytographic Notes.' — Id., 'Novitates Occidentales.' — S. B. Parish, 'Additions to Flora of S. California.'

Gardeners' Chronicle (April 6).—*Abies balsamea* (figs. 57, 58, 60). — R. A. Rolfe, *Bulbophyllum grandiflorum* (fig. 59). — (April 13). *Aristolochia Dammeriana* Masters, sp. n.

Journal de Botanique (Feb. 16, March 16).—E. Belzung, 'Marche totale des phénomènes amylochlorophylliens.'—(Feb. 16, March 1). L. Géneau de Lamarlière, 'Cryptogames vasculaires du Nord de la France.' — (March 1). E. Perrot, 'Sur les îlots libériens intraligneux des *Strychnos*.' — P. Hariot, 'Algues de la région magellanique.' — (March 16). —. Hue, 'Lichens de Californie.' — P. Hariot, '*Tenarea*.'

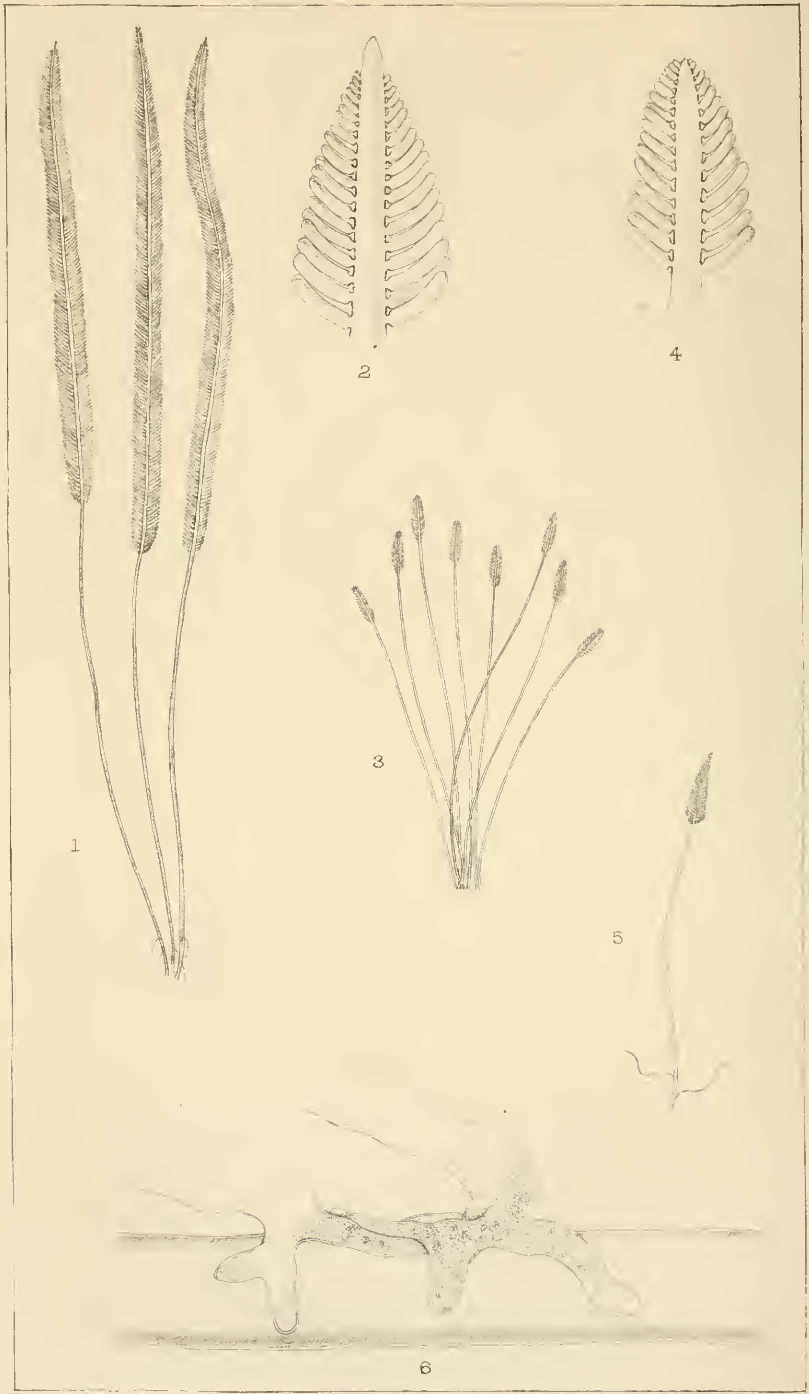
Nuovo Giorn. Bot. Ital. (April 10). — S. Sommier & E. Levier, 'Decas Umbelliferarum novarum Caucasi.' — Id., 'Decas Compositarum novarum & duæ Campanulæ Caucasi novæ.'—U. Martelli, '*Iris pseudo-pumila* Tin.'—C. Massalongo, 'Un nuovo entomocecidio' (1 pl.). — G. Nobili, 'Flora del Monte Mottarone.' — A. Preda, 'Flora vascolare livornese.' — U. Brizi, 'Ricerche sulla brunissure delle foglie della vite.' — G. Sandri & P. Fantozzi, 'Flora di Valdinievole.'—P. Voglino, 'Sullo sviluppodi alcuni Agaricini.'

Oesterr. Bot. Zeitschrift (April). — E. Halácsy, 'Zur Flora von Griechenland.' — J. v. Sterneck, *Alectorolophus* (2 pl.: cont.).—A. v. Degen, 'Ueber einige orientalische Pflanzenarten.'—J. Freyn, 'Plantæ Karoanæ Dahuricæ' (cont.). — C. Warnstoff, 'Zur Kenntniss der Bryophyten Ungarns.' — F. Arnold, 'Lichenologische Fragmente' (cont.).

OBITUARY.

Mrs. Elizabeth Ann Lomax (*née* Smithson) died at Torquay on 16th March last, in her eighty-sixth year. Born on February 22nd, 1810, at Pontefract, in Yorkshire, most of her youth was spent either at that place or in the county of Durham. In 1842 she married Mr. Robert Lomax, J.P., of Lomax Fold, Harwood, near Bolton-le-Moors, Lancashire, who died in 1850. A few years afterwards she removed to Harrow, where both her sons were educated. It was not until 1869–70 that she first turned her attention to systematic botanical collecting; but she was not long in joining the Botanical Exchange Club, and being at that time resident near Penzance, made the acquaintance of Mr. Curnow and other local botanists, who materially aided her in her researches, the result being the gradual formation of a well-prepared and rich British herbarium, characterized by much neatness of detail and method in arrangement. Almost to the close of her long life she continued to take a vivid interest in things botanical, and, usually accompanied by her daughter, would often journey to out-of-the-way places to see rare plants *in situ*, e. g. *Leucojum vernum* at Bridport, *Trichomanes Columnæ* at the Warren, Dawlish, and *Saxifraga Hirculus* on Cotherstone Fell, York. The writer had the pleasure, in July, 1878, of staying with her at Braemar, and well remembers her almost youthful enthusiasm over the rare plants of Glen Callater, Lochnagar, and the Cairngorm range of mountains. For nearly twenty years she resided more or less at Torquay. Her herbarium has been offered by her trustees as a gift to the Manchester Museum, Owens College.—J. C. M.

Tab. 349.



E.S.Barton del.
R.Morgan lith.

West,Newman imp.

1,2,5. Bryopsis Flanagani *Bart.*
3,4 B. setacea *Hering.* 6 B cupressina *Lam*

NOTES ON BRYOPSIS.

By Ethel S. Barton.

(Plate 349.)

Among the numerous genera of algæ at the Cape of Good Hope which have been added to and commented upon lately, no remark has been made about *Bryopsis*. Species-making in this variable genus is dangerous; nevertheless I have ventured to do this in one instance, and, while hoping to make a further study of *Bryopsis*, I propose now to note here one or two points which may be of interest.*

Among the specimens of *Bryopsis* collected by Mr. Boodle near Cape Town in 1889–90 are some plants of *B. cupressina* Lam., a species new to the Cape. At first sight it has the appearance of being much branched, but a closer inspection shows that the supposed branches are in reality separate plants, which are clinging by means of haptera (fig. 6) to the stem of an older plant. These haptera interlace with each other, and the separate plants grow in some cases densely matted together. I know of no other instance of this form of growth in other species of *Bryopsis*, but it is interesting to observe that Solier, in his account of *Derbesia Lamourouxii* (*Ann. Sci. Nat. Bot.* ser. 3, vii. 163), says, speaking of the zoospores:—"Ces fruits se développent souvent sur la plante, et forment un fascicule de rameaux semblable à la plante primitive. Le poids de ces rameaux fait coucher le fil qui les porte; ils s'attachent au sol, et bientôt il y a une succession de petites plantes liées entre elles, qui imite une plante traçante." No mention, however, is made of the haptera, which are so obvious in *B. cupressina*, and, so far as I can see, the haptera cling only to the stem of the supporting plant, and do not afterwards attach themselves to the ground.

While speaking of *B. cupressina*, I would remark that while De Toni in his *Sylloge Algarum* has placed under this the *B. adriatica* of Meneghini, M. Bornet in his list of the Schousbœan algæ has entered both *B. cupressina* and *B. adriatica* as distinct species. A comparison of authentic specimens of *B. adriatica* in the British Museum with Lamouroux's figure of *B. cupressina* (*Journ. de Bot.* 1809, t. 1, fig. 3) would point to their being regarded as separate species. I would also suggest that *B. Gasparrinii* Menegh. be again raised to specific rank.

A comparison of the type-specimens of *B. myosuroides* Kütz. and *B. setacea* Hering shows the two plants to be identical. *B. myosuroides* must therefore give way to the earlier name of Hering. Since *B. setacea* has apparently never been figured, a drawing is here given of the type-specimen collected by Krauss at Natal,

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* I have already seen a large series of specimens (including many types), and should be glad to work out any material of this genus entrusted to me. I wish to thank Mevrouw Weber van Bosse, Prof. J. G. Agardh, and Prof. Suringar, for their kindness in lending me valuable specimens.

No. 222, which is preserved in the British Museum; this drawing shows the identity of the plant with *B. myosuroides* Kütz., as figured in the *Tab. Phyc.* vi. t. 77, fig. 1.

Among the algæ sent to me some while ago from British Kaffraria by Mr. Flanagan is a new species of *Bryopsis*, which may be placed in the same division of the genus as *B. plumosa*, *B. pennata*, and *B. setacea*, i. e., that devoted to species with a distichous initial plume. It differs from *B. setacea* in having the whole of the upper half of the stem clothed with ramenta, and tapering at the apex to a point. From *B. pennata* it may be distinguished by its more robust habit, the gradually tapering apex, and by the long, bare stem below the middle. I have dedicated this species to its finder, Mr. Flanagan, a most assiduous and successful collector, to whom I owe the possession of many interesting and rare forms of Cape algæ. The diagnosis is as follows:—

B. Flanagani, n. sp. Fronde lanceolata, muris ratti caudæ simili, erecta, quum adulta sit 11 cm. alta, dimidiam inferiorem partem nuda, superiorem ramulis simplicibus distichis ornata, qui haud amplius quam duo cm. a summo minui incipiunt; quum adolescat summam quintam partem caulis ramulis vestitam habet, qui ab imo usque ad apicem Bryopsis plumosæ more minuuntur.

Hab. Ad rupes submersas, British Kaffraria. Coll.: *Flanagan*!

Among the algæ collected by Ferguson in Ceylon, No. 37, is a form of *Bryopsis* which appears to unite *B. setacea* and *B. pennata*. In some plants the tip only is clothed with ramenta, resembling in shape and size *B. setacea;* while other stems have the ramenta continued either with or without intervals nearly to the base. Such plants as these make one realise the truth of what the elder Agardh said of this genus years ago:—"Quid varietas, quid species sit, in hoc genere definitu difficillimum neque adhuc definitum."—Ag. *Sp.* i. 448.

Explanation of Plate 349. — 1. *Bryopsis Flanagani*, nat. size. 2. Ditto, apex × 15. 5. Ditto, young plant, nat. size. 3. *B. setacea*, upper half of plant, nat. size. 4. Ditto, apex × 15. 6. *B. cupressina*, haptera × 15.

RARE OR CRITICAL W. SURREY PLANTS, 1894.

By the Rev. E. S. Marshall, M.A., F.L.S.

Dr. Focke and the Rev. W. Moyle Rogers spent a few days with me last August, when a few species of *Rubus* were added to the county list, and several hybrids were met with which were not previously known to exist. As these have not been mentioned by Mr. Rogers in his recent paper, it may be worth while to record them. The forms of *Erophila* in my neighbourhood received some special attention, and two of them at least appear to me to deserve segregate rank; but as yet I have failed to identify them satisfactorily with French types. A couple of excursions were made with Capt. Wolley Dod to the Sussex border, near Baynards and Alfold, and to the Hants border, about Blackwater and Frimley.

Erophila stenocarpa Jordan. Frequent, especially in cultivated sandy soil.

Cerastium tetrandrum Curtis. By a disused lock of the old Wey and Arun Canal, near Alfold. Probably brought up long since with ballast from Littlehampton, where this species is abundant.

Stellaria umbrosa Opiz. In great profusion by ditches, &c., in the water-meadows between Blackwater and Frimley; flowering and fruiting freely on May 14th.

Potentilla procumbens × *silvestris*. Near Haslemere and Dunsfold, in several places; evidently frequent in the district.—*P. reptans* × *silvestris*. In two localities near Chiddingfold; approaching *silvestris*.

Rubus argentatus P. J. Muell. Pointed out to me by Dr. Focke in two or three places near Milford and Witley. — Var. *robustus* (P. J. Muell.). Between Greyswood and Haslemere.—*R. pubescens* Weihe, var. *subinermis* Rogers. Copse on Wareham Hill, near Witley; railway-bank east of Haslemere.—*R. Babingtonii* Bell-Salt. Wareham Hill; abundant near Haslemere. — *R. Bloxamii* Lees. Roadside-bank close to Shackleford Church.—*R. Bellardi* Wh. & N. Very sparingly on Wareham Hill. — *R. Babingtonii* × *rhamnifolius*. Railway-bank between Haslemere and Greyswood. — *R. corylifolius* × *rusticanus*. Hedge on the borders of Puttenham Common. — *R. foliosus* × *Marshalli*. Railway-bank between Haslemere and Greyswood.—*R. holerythros* × *rusticanus*. Roadside, Witley Common.—*R. imbricatus* × *leucostachys*. Slopes of Greyswood Hill, near Haslemere; the former species is decidedly frequent in the sandy parts of the district.—*R. leucostachys* × *Marshalli*. Near the top of Greyswood Hill. — *R. leucostachys* × *pulcherrimus*. On a small bramble-grown common immediately above Haslemere village.—*R. mutabilis* × *rusticanus*. Roadside near Lea Park, Witley; also on Dunsfold Common. In every instance these hybrids grew associated with the parents, and were good intermediates; all of them were substerile, with the exception of *Babingtonii* × *rhamnifolius*, which had the young fruit plentifully produced.

Callitriche pedunculata DC.? A small and delicate plant, with very distinctly-stalked fruits, grows in shallow pools on Dunsfold Common; I have not met with it elsewhere.

Hieracium cantianum F. J. Hanbury. Hedgebank below Hindhead, on the Witley side. Named by Mr. Hanbury.

Carex dioica L. An apparently new station was found for this plant, so rare in S.E. England. It grows over a few square yards of very wet bog, not far from the Guards' quarters, about a mile west of Brookwood Station. — *C. elongata* L. Rather plentiful locally, between Blackwater and Frimley. — *C. acuta* L. By the Wey and Arun Canal, near Alfold.

Lolium linicola Sonder. Grassy lane near Dunsfold Common. Determined by Mr. Arthur Bennett.

NOTES ON KENTISH PLANTS OBSERVED DURING 1894.

By the Rev. E. S. Marshall, M.A., F.L.S.

I was prevented from paying many visits to the county during last year, and few of my gatherings are of special interest. Those which appear to be new to either E. or W. Kent (Watson's 15th and 16th vice-counties) have an asterisk appended to them.

Papaver somniferum L. I do not think that the "varieties" *hispidum* and *glabrum* are worth distinguishing, as Mr. J. F. Jeffrey and myself met with a plant near Thornham, 15, which produced them both!

Barbarea intermedia Boreau. A plant or two occurred in a field of *Medicago lupulina* near Bough Beech, Penshurst, evidently introduced with the crop.

[*Rapistrum rugosum* All. In some quantity by the Medway at Forstal, above Aylesford, bidding fair to become naturalized; also at Shorncliffe Station, a single specimen.]

Viola Riviniana Reich., var. *nemorosa* Neum. W. & M. Wooded banks of the Eden, between Penshurst and Chiddingstone.

[*Vicia lutea* L. A few specimens grew in a field of *V. sativa* near Ashford, clearly sown with it, as they were in the drilled lines. The species is wild at Lydd, not many miles distant.]

Rubus hirtifolius Muell. & Wirtg. Wood near Paddlesworth, 15*; named by Rev. Moyle Rogers. The plants referred to last year (p. 145) as *R. Lejeunei* prove to be *R. Babingtonii* Bell-Salt.

Œnanthe silaifolia Bieberstein. Plentiful in a marshy meadow near the Eden, below Chiddingstone, 16*.

Galium Mollugo × verum. With the parents, on a furze-clad common between Lyminge and Paddlesworth, 15. The *Galium* referred to in my last paper (p. 146) as probably new had been mown off only a few days before my return to the spot; but roots of it were secured, and are doing well in cultivation, so that I hope to settle the point before long.

Carduus crispus × nutans. Boxley Warren, 15. Confirmed by Dr. Focke.

Taraxacum udum Jordan. Damp pasture near the Eden, in Chiddingstone Park, 16*.

Sonchus palustris L. This still occurs in the Aylesford district in good quantity, both in E. and W. Kent. Not given for 15 in *Top. Bot.*

Salicornia appressa Dumortier. This was found in a second Kentish station by Capt. Wolley Dod and myself; it is abundant, but very local, on muddy ground to the west of Seasalter, extending over the best part of an acre. A specimen among Woods's plants (kindly lent to me by Mr. Townsend for inspection), so labelled, but not localized, is precisely the same thing. It will be found in other southern counties, if searched for.

Polygonum Raii Bab. On the beach, west of Sandgate, 15*; I only saw one fine specimen.

Scirpus carinatus Sm. In good quantity by the tidal Medway, near Aylesford; probably a hybrid between *S. Tabernæmontani* and *S. triqueter*, with which it seems to be usually, if not always, associated. The Eastwear Bay and other E. Kent stations doubtless belong to *S. Tabernæmontani*.

Carex acuta L. Remarkably plentiful by the Eden, above Penshurst, 16.

MR. SCOTT ELLIOT'S TROPICAL AFRICAN ORCHIDS.

By A. B. Rendle, M.A., F.L.S.

The following Orchids were recently collected by Mr. G. F. Scott Elliot in his Ruwenzori expedition. Mr. Elliot started from Mombasa, and proceeded up to Uganda by the ordinary caravan route; from thence to Ruwenzori, returning by Lake Tanganyika and the Shire Highlands to the mouth of the Zambesi. He collected along the whole route.

Eulophia longepedunculata Rendle in *Journ. Linn. Soc.* xxx. 382.

Hab. Majichumvi, coast district, Mombasa, No. 6142, November (commencement of lesser rains), 1893.

Distrib. East Equatorial Africa; probably a coast species.

Eulophia humilis, sp. nov. Humilis, foliis linearibus setaceis caulis tenuis basi circumdatis; racemo paucifloro bracteis acuminato-setaceis, pedicellos haud æquantibus; floribus pro planta magnis, sepalis longis ligulatis crassiusculis, petalis lanceolatis, labelli lobo medio spathulato, callis lamelliformibus disco instructo, lateralibus pæne rectangulis ascendentibus, basi in saccum calcare brevi terminatum transeuntibus; columna apoda, alata, anthera valde apiculata, polliniis 4.

Hab. Ndurandi, 3000–4000 ft., Shire Highlands, Dec. (lesser rains), 1894, No. 8484.

A small plant a foot high, the wiry flowering stem clothed at the base with a few short blunt subscarious bracts, above which appear 4 stiff slender grass-like linear leaves, plicate at the midrib, the only perfect one ending in a short bristle; the longest (damaged at the tip) measured 5 in. The stem bears just below the middle one small sterile membranous bract with a long setaceous tip from a lanceolate base; the floral bracts are similar; the two lowest are 3 and 4½ lines long respectively. The lax raceme (3¼ in.) bears 5 flowers. The ligulate sepals have an acute apex, are 1 line broad, the lateral being 10 lines long, the dorsal 9 lines. The more delicate lanceolate petals have an acute apex and 3 median nerves; they measure 6 by 1½ lines. The large lip measures 1 in. from the end of the short blunt spur (1½ line) to the tip of the central lobe (6 lines long by 3 broad); the latter is spreading, with a crenulate margin. The lateral lobes end almost squarely, forming the ascending sides of a chamber equal in height to and evidently in the fresh state embracing the column; this chamber passes below into a large sac, which itself passes gradually into the spur. The column is 2½ lines long. The anther bears a central blunt apiculus.

Is near *E. longisepala* mihi in *Trans. Linn. Soc.* 2, iv. 43, in its long sepals much exceeding the petals, which are also different in shape. The habit of the two species is also very similar. Mr. Elliot's plant is, however, at once distinguished by the different shape of the lip, the long spathulate central lobe of which contrasts markedly with the very short broad one of the Milanji plant, which has also slightly larger narrow clavate sepals, and cuneate-spathulate petals.

Eulophia ruwenzoriensis, sp. nov. Planta elata, foliis a basi lineari lanceolatis, inter venas validas membranaceis, caule bracteis tubulosis subscariosis internodos excedentibus usque ad racemum dense capitatum induta; bracteis florentibus lanceolatis acuminatis, inferioribus flores æquantibus vel excedentibus; sepalo dorsali cuneato, lateralibus ovalibus, petalis oblongis vel oblongo-cuneatis, velut sepalis 3-nerviis; labello 3-lobo, basi vix gibboso, lobo medio suborbiculari, disco verrucoso; lobis lateralibus ascendentibus breviter oblongis; columna apoda brevi crassa, anthera apiculata, polliniis 2, globosis.

Hab. Ruwenzori (eastern side), sunny hill-sides, 6–7000 ft., Nos. 7813 & 7859; ditto, granite, 5300 ft., No. 7551, April to May, 1894 (greater rains).

The only adult leaf present is 16 in. long, and nearly 2 in. at its broadest. The younger leaves are narrower and grass-like. The tall slender flowering stems (17–28 in. long) are clothed up to the inflorescence with the long subscarious bracts, which become free at the edges, half an inch or more below their blunt apex. The short raceme (about 1½ in. long) is globular or ovoid in outline; the lowermost of the scarious floral bracts reach an inch in length; they are light brown, with strongly-marked veins. The flowers vary in colour in the specimens from different localities; No. 7859 has light-coloured flowers, those of No. 7813 have been a deep red, while in No. 7551 they are still deep purple in the dried state. In No. 7813 they are also slightly larger, with the sepals and petals more oblong; while in No. 7551 they are very slightly smaller than in No. 7859, which supplies the measurements given below. There is a general similarity between the sepals and petals. All have 3 parallel nerves running from base to apex. The dorsal sepal is 5 lines long by 2½ broad; the apex is slightly apiculate. The lateral sepals and petals are obtuse, the former 4½ by 2–2⅓ lines, the latter 4½ by 2 lines. The short lip is 4 lines long, with ascending slightly asymmetrical lateral lobes, the free part of which is 2 lines long and nearly as broad. The roundish central lobe (2½ by 2¾ lines) bears a few irregularly-shaped deeply-coloured warts on the disc, where also the veins are more deeply coloured. The short thick column is 1½ lines long by 1 broad. At the base of the lip is a slight gibbosity.

Eulophia præstans, sp. nov. Caule crassa, bracteis internodos æquantibus vaginata, racemi brevis densi bracteis scariosis longis subulatis; floribus magnis purpureis, sepalis lanceolatis

acutis (lateralibus obliquis), petala acuta oblongo-lanceolata vel ovali-oblonga valde superantibus; labello 3-fido, lobis lateralibus minoribus oblongis rotundatis, lobo medio late ovato emarginato, carinis geminis medianis e calcaris obtusi orificio ortis sub lobo medio auctis, disco sparse callis filiformibus instructo; columna apoda brevi crassa, margine alata, anthera obtuse apiculata.

Hab. Shire Highlands, Dec. (lesser rains), 1894, No. 8616.

The leafless flower-stalks (the base of which is not present) are apparently about 1½ ft. long. The subscarious subacute sheathing bracts are about 3 in. long, and united for two-thirds their length. The raceme is 2 in. long; the long narrow setose bracts reach an inch. The lateral sepals have their inner (anterior) side larger, and are 1¾ in. long by 8 lines broad; the dorsal is about 1 line shorter and narrower. The petals are 16–17 lines long by 5–5½ broad. The lip is 14 lines long; the forwardly-directed lateral lobes are 3 lines broad, and 3 lines along the shorter anterior side; the central lobe is ¾ in. long by ½ in. broad. Two low median keels pass from the opening of the spur, and end below the central lobe in two lamelliform calli. The cylindrical forwardly-curved spur is 2½ lines long. The column is 3 lines long. The 4 pollinia are united in two semiglobose pairs. The scabridulous ovary (4 lines long) is borne on a stalk ½ in. long. After fertilisation the flowers become reflexed parallel with the stem.

Eulophia (§ CYRTOPERA) **subulata**, sp. nov. Caulibus subtenuibus nudis, bracteis sterilibus scariosis tandem laceratis, florentibus longis subulatis, racemo denso subterminali; floribus inter mediocres, sepalis lanceolatis acuminatis, petalis his similibus sed vix acuminatis, labello 3-lobo, lobo medio obovato facie glabro, lobis lateralibus minoribus oblongis prorsum versis, calcare brevi tenui, columna anguste alata in pedem brevem producta.

Hab. Dry rather bare alluvium, Katonga river, south of Uganda (Victoria region), Feb. 26 (between the rains), 1894, No. 7417.

Not a striking plant. The slender leafless flowering-stems (12–15 in. long) spring two (or more?) together from a small rhizome. The scarious cauline bracts have their edges united below, free above, but appressed to the stem; they tend to tear into strips, by disappearance of the mesophyll between the somewhat prominent veins. The narrow floral bracts are almost awn-like; they exceed the stalked ovary in length, the lowermost being 7–9 lines long. The rather shortly stalked flowers are crowded in a subcapitate raceme 1½–2 in. long. They were apparently concolorous (yellow). The sepals are 10 lines long by 4 broad, the petals 8 by 3. The lateral sepals are attached to the foot of the column. The lip is 8 lines long; the spreading upper lobe (4½ by 3¾ lines) has a rounded apex and a smooth upper surface, except for the slightly raised principal veins just above the origin of the smaller ascending lateral lobes; two central slightly elevated veins pass from the base of the lip, increasing in size at the point of division, and ending just above it. The column is 2 lines long, with a foot 1 line long; the thin straight spur 1 line. There are 2 pollinia.

Is near *E. milanjiana* mihi, *l.c.* p. 44 (Nyasa-land), but is a smaller, slenderer plant, and differs in its lanceolate perianth-leaves, and smaller lip with no tomentum on the surface of the central lobe. Is also near the South African *E. ensata* Lindl.

Eulophia (§ CYRTOPERA) **missionis**, sp. nov. Planta tenuis, caulis nudæ bracteis scariosis longe tubulosis apice solum liberis internodos æquantibus, racemi longe acuminatis stramineis pedicellos sublongos cum ovario vix æquantibus; floribus inter minores, sepalis petalisque similibus ovato-lanceolatis subacuminatis, lateralibus in pede columnæ insertis, labello trilobo, lobo medio cuneato crenulato facie callis filiformibus dense induto, lobis lateralibus minoribus oblongo-falcatis, calcare brevi.

Hab. Foot of Mt. Milanji, about 4000 ft., Nyasa-land, Dec. (lesser rains), 1894, No. 8618.

A young leafy shoot springs from the tubular sheath at the base of one of the flowering stems; two long narrow strongly-veined leaves emerge from the upper long slender tubular bract (3 in. long), which becomes free only about ½ in. below its obtuse apex. The slender flowering-stems are 17–21 in. long, including the not dense raceme (2½–3½ in.); the internodes, except in the upper third, are sheathed by the close-fitting bracts, which become free a short distance below their subacute tip. The lanceolate straw-coloured floral bracts are ½ in. long in the lower part of the raceme. The slender flower-pedicel with the ovary is slightly longer. The lateral sepals are attached by a rather broad base to the foot of the column; they are somewhat asymmetrical, and ½ in. long by 2 lines broad; the lateral petals are similar, and similarly attached, but slightly shorter (5 lines); the dorsal sepal differs from the lateral in being symmetrical, and ½ line shorter. The lip is 5½ lines long; the ascending lateral lobes measure 2 lines on the shorter side and are 1¼ lines broad; the median lobe is 2¾ lines by scarcely 2 lines at its broad apex; the upper surface bears a tomentum of long simple or branched emergences; two lamellæ run from the base of the lip, and end below the median lobe in two shortly fimbriated flattened calli. The spur projecting at an obtuse angle from the base of the lip is scarcely 1 line long. The column is narrowly winged, 2¾ lines long, the foot nearly 2 lines. The anther is bluntly apiculate; there are 2 pollinia attached to the gland by a short broad strap.

A distinct plant, recalling the last species in habit and general structure of the flower, but easily distinguished by the very long tubular stem-bracts, the shorter floral bracts, and the smaller longer-stalked flowers. The cuneate median lobe of the lip, with its characteristic tomentum, is also a distinction.

Mr. Elliot has suggested the specific name which commemorates the kind attention received at the mission station, near which the plant was found, during a severe attack of fever. This attack is much to be regretted, as it stopped Mr. Elliot from his intended ascent of Milanji, which, to judge from our knowledge of the mountain gained from Mr. Whyte's collection, might have proved of considerable botanical value.

Eulophia (Cyrtopera) **aristata**, sp. nov. Bracteis caulinis arcte amplexicaulibus acutis quam internodi infima excepta brevioribus; racemo laxo paucifloro, bracteis anguste lanceolatis apice aristatis, pedicellum cum ovario longe excedentibus; flore inter majores, sepalis ligulatis, dorsali obtuso, lateralibus majoribus superne angustatis et acutis, petalis similibus sed minoribus, labello basi late pandurato carinis geminis instructo, lobo terminali oblongo venis elevatis et dentatis lineato, calcare brevi rotundato; columna valida in pedem producta.

Hab. Shire Highlands, Dec. (lesser rains), 1894, No. 8616 pars.

The slender flowering-stem (20 in. long) bears 3 closely-sheathing bracts with edges united for a short distance only above the base; the lowest is 3, the uppermost 2⅓ in. long. The raceme is 3½ in. long. Of the elongated aristate flowering-bracts, the lowest is 13 lines, the uppermost are 7–8 lines. The flower-stalk and ovary are together half an inch. The sepals and petals are similar in form, all being ligulate; the latter are smaller. The dorsal sepal is 8½ by 2½ lines, the lateral are 10 by 2½, and the subacute petals 7½ by 1½ lines. The lip measures 9 lines from the mouth of the short (1⅕ lines long) rounded spur to the slightly emarginate apex. The base is 5½ lines broad, the terminal lobe 3½ lines long by 3 broad. Two parallel median keels run from the mouth of the spur to below the base of the end lobe, where they break up into a number of raised veins, which are continued over the greater part of the latter, bearing numerous curving tooth-like processes. The short broad column (3½ lines long) is continued into a foot 3 lines long, to which the lateral sepals are attached.

Lissochilus arenarius Lindl. in *Journ. Linn. Soc.* (*Bot.*), vi. 133.

Hab. East side of Albert Edward Nyanza, dry grassy hills, 4–5000 ft., Aug. 1894, No. 8032. Stevenson Road, per Mr. Carson, 4–5000 ft., Nov. 1894, No. 8362. Shire Highlands, Dec. 1894, No. 8621.

Lissochilus Elliotii, sp. nov. Egregia, caulis crassæ bracteis subfoliaceis basi solum amplexicaulibus; florentibus magnis late ovatis obtusis, pedicellos haud æquantibus; floribus magnis, sepalo dorsali spathulato abrupte acuminato, lateralibus in pede columnæ insertis oblongo-spathulatis pæne aristulatis, petalis uncialibus orbicularibus, labello crasso crispo alis rotundis, lobo medio oblongo cristis tribus medianis instructo, calcare brevi crasso.

Hab. Marshy place, Wimi River, Ruwenzori, eastern side, 7000 ft., June (rains), 1894, No. 7924.

A fine plant, "about 5 ft. high," the stem reaching ½ in. in diameter. The large stem-bracts have their edges free for the whole length, and are subpatent above an amplexicaul base. The largest raceme is 1½ ft. long, the blunt bracts ¾ in., the flower-stalks below the ovary about 1 in. The dorsal sepal is 13 lines long by 5½ broad, the lateral ones are 11 by 5; the petals 1 in. long, and almost as broad. In the lip the suberect lateral lobes are ½ in. long, the spreading central one 10 lines long by 8–9 broad; the blunt conical sac at the base is ½ in. long, including the short thick terminal spur (2 lines). Three crisped median ruffles, rising 2 lines from the surface, run from the entrance of the sac to within 5 lines of the rounded tip. The short curved column (½ in. long by 3½ lines broad) is prolonged into a foot. The two large hollow pollinia are connate, and not separable without tearing.

Belongs to the group of large-flowered species which includes *L. giganteus* Welw. (West Tropical Africa), *L. porphyroglossus* Rchb. f. (Niam Niam and Monbuttu), and *L. Welwitschii* Rchb. f., from Huilla. It is distinguished from all of these by the large thick central lobe of the lip; from the first also by its shorter bracts and smaller petals, and the 3 strongly-developed ruffles on the lip; from *L. Welwitschii* by its more orbicular petals and shorter bracts; and from *L. porphyroglossus* by its somewhat larger flowers, thicker spur, and blunt (not aristulate) bracts.

Lissochilus papilionaceus, sp. nov. Speciosa racemo elongato laxifloro, bracteis longe acuminatis, inferioribus linearibus gradatim ad superiores lanceolatas transitum præbentibus, pedicellos tenues cum ovario parvo excedentibus; sepalis lanceolatis acutis, lateralibus subfalcatis, petalis obovatis, sepalis æquilongis; labello basi saccato, calcare brevi, alis erectis late oblongis, lobo medio breviter ovato, convexo cum carina mediana crassa antice evanescente; anthera caruncula brevi bifida coronata.

Hab. Stevenson Road, 4–5000 ft., Nov. (lesser rains), 1894, No. 8268.

The leafless flowering-stems are 2½ ft. or more in length; the scarious stem-bracts sheathing below, with a free acute upper part. The racemes measure 11 in.; the lower bracts are an inch or more, the upper ½ in. long. The sepals have an abruptly acute plicate apex, are 7-nerved, and 8½ lines long by 3 broad. The petals are 5½ lines broad, with a minutely apiculate plicate tip. The wings of the labellum are 3½ lines by 2½, with a rounded apex; the median lobe (5½ by 4 lines) has the characteristic plicate apiculate tip. The blunt spur is only 1 line long. The rather thick footless column is 2½ lines long. The anther is suborbicular. The two pyriform pollinia (1 line long) are each partly split into two, and attached to the ribbon-like stalk (1⅓ lines long) of the rostellum.

Is near the Angolan *L. Paivæanus* Rchb. f., but has slightly smaller flowers and ovate petals (in *L. Paivæanus* they are broader and more rhomboid). The West African plant has also cuneate sepals and shorter-pointed bracts, which do not equal the pedicel and ovary. The allied Angolan species *L. Renschianus* Rchb. f. in *Otia Bot. Hamb.* 75, differs (e descriptione) in having cuneate-ligulate sepals, acute rhombic petals, and a lip with a subrhombic ligulate central lobe.

L. Wakefieldii Rchb. f. and S. Moore in *Journ. Bot.* xvi. (1878), 136.

Hab. Stevenson Road, per Mr. Carson, 4–5000 ft., Nov. (lesser rains), 1894, No. 8266.

Lissochilus ruwenzoriensis, sp. nov. Foliis plicato-venosis, inflorescentia sæpe laxe ramosa, bracteis lanceolatis acuminatis,

pedicellos cum ovariis vix æquantibus; floribus inter mediocres, sepalo dorsali subcuneato-oblongo, lateralibus ovalibus interdum subfalcatis et basi angustatis; petalis subrhombeis; labelli alis erectis oblongis, lobo medio rotundato convexo, carina mediana basi bilamellata instructo, calcare brevi obtuso.

Hab. Ruwenzori (eastern side). Common about 6000 ft. in short bush, No. 7871. Kivata, sunny hills, 6–7000 ft., No. 7735 (fruiting specimen), May (greater rains), 1894.

The long leaves (20–22 in.) become narrowly lanceolate above, with a tapering apex from a narrow plicate base. The inflorescence reaches 2½ ft., and bears a few (3 in specimen) ascending branches about 9 in. long; shorter simple inflorescences also occur. The flowers are somewhat laxly racemose. The subscarious spreading floral bracts are 6–8 lines long. The flowers closely resemble those of *L. streptopetalus* Lindl., but the petals and lip-wings are apparently rosy in colour. The sepals are 5-nerved, with often a minutely apiculate, otherwise rounded, apex. The dorsal is 6½ lines long by 3½ broad, the lateral ones 7 lines by 3½–4. The petals are 6 lines long, and about as broad. The wings of the lip are 2½ lines by 2; the projecting central lobe (3½ lines each way) has strongly-recurved sides, its fleshy median keel increases in the lower half to a bilamellate crest, which curves over above the mouth of the short thick blunt spur (1 line long). The column is 2½ lines long by nearly 1 broad, and has no foot. The two pyriform hollow pollinia (1 line long) are attached each side of the apiculate apex of the ribbon-like stalk (1½ lines long) of the rostellum. The ovate-oblong fruit is 1½ in. long.

In floral character is very near the Cape species *L. streptopetalus* Lindl., but has shorter more oblong blunt sepals. The shorter, more rigid, acuminate bracts and the large compound inflorescence are also distinguishing features. Is also near the Abyssinian *L. graniticus* Rchb. f., but has the sepals much larger, and the central lobe of the lip a little shorter; the bracts are also larger.

Lissochilus shirensis, sp. nov. Caule simplici, racemo laxo (? uniramifero) terminata, bracteis lanceolatis vel ovatis acutis, pedicellos cum ovariis haud æquantibus; floribus inter mediocres, sepalo dorsali late cuneato, lateralibus spathulato-cuneatis, petalis subrhombeis quam sepala multo latioribus, labelli alis rotunde oblongis, lobo medio orbiculari convexo carina mediana antice evanescente basi incrassata et bifida instructo, calcare breviter conico.

Hab. Sotchi, Shire Highlands, 3000–4000 ft., Dec. (lesser rains), 1894, No. 8613.

The tall flowering stem (4 ft. long) bears in its thicker lower half scarious apparently deciduous bracts, which taper gradually from a sheathing base to an acute apex, and are shorter than the nodes. The only perfect one present is 3½ in. long. A small branch seems to have been broken off from the lower part of the lax raceme, which is about 18 in. long. The lower bracts are lanceolate, the upper ovate, and all acute, the lowermost are 10 lines

long, the uppermost, in which only flowers remain, 4 lines. The slender pedicel, with the ovary, is 7 lines long. The sepals are 7-nerved, the very blunt dorsal one is minutely apiculate, and 6 by 4 lines; the lateral ones have a rounded apex, and are 7 by 4 lines. The more delicate almost oblate petals are 6 lines long by 8 broad. The broad ascending wings of the lip are 3–4 lines long by 3 broad. The median lobe is 4½ lines each way. The central keel becomes fleshy at the base, where it is also longitudinally bifid. The spur is 1½ lines long. The short thick almost club-shaped column is 3 lines long by nearly 2 broad at the top. The two pyriform pollinia show an indication of a second division by a posterior slit, and are a little over 1 line long; the ribbon-like stalk of the rostellum 1½ lines.

Is near *L. ruwenzoriensis* mihi, but has not the large branching raceme characteristic of that plant. It differs also in the shape of its slightly broader sepals, in its much broader petals, and larger lip.

Lissochilus saccatus, sp. nov. Bipedalis, caule aphylla, bracteis sterilibus scariosis subbrevibus, racemi sublaxi bracteis lanceolatis brevibus, pedicellos subæquantibus; floribus inter mediocres, roseis, sepalis obtusis, dorsali ovali-oblongo, lateralibus oblongis, basi truncata, petalis late orbiculari-ovatis, labelli lobo medio late ovali obtuso, lateribus reflexis, margine crispulato, disco elevato cristas tres lamelliformes gerente, alis saccum latum, in calcar crassiusculum elongatum, circumdatis; columna crassa, polliniis 2.

Hab. Rocky ground, Nandi (Nile watershed), 6–7000 ft., Jan. (between the rains), 1893, No. 6988.

The few lower subacute bracts on the rather slender leafless stem are 1¼–1 in. long, with the edges united nearly to the top, above or to the middle, according to their height on the stem. The acuminate fertile bracts are 5 lines long in the lower part of the raceme (6 in. long), becoming gradually shorter above. The sepals are much alike, and 5–6-veined, the more oblong lateral ones being slightly longer (nearly 6 lines long by 2¾ broad), the dorsal measuring 5 by 3 lines. The broad rounded petals are 8 lines long by 9 broad. The prominent sides of the lip surround a large sac, terminating in a blunt spur 3 lines long; the projecting central lobe is 5 lines long by 4 broad; the delicate sides recurve, while the convex disc bears 3 parallel crests, each about 1 line in height, the median projecting beyond the others. The rounded anther is sub-bilocular. Fruit oval-oblong, 1 in. long.

Is very near *L. milanjianus* mihi (in *Trans. Linn. Soc.* 2, iv. 46) in general shape of the flower and the crested labellum, but the flower in *L. saccatus* is considerably larger, with larger wings to the lip. The column is also longer, as are also the sepals, which are blunt, not sharp and aristulate, as in the Milanji plant. The stem-bracts are also more tubular. The time of flowering is different, namely, January as compared with October.

Lissochilus monticolus, sp. nov. Bracteis caulinis vaginantibus subbrevibus sæpe maculatis acutis, racemi laxi brevibus lanceolatis, floribus illis *L. milanjiani* et *L. saccati* similibus; sepalis apiculatis, 6–7-nerviis, dorsali breviter oblongo, lateralibus e basi truncata ovatis, petalis late orbiculari-ovatis obtusis; labelli alis vix prominentibus, sacco basali magno conico a calcare crasso antice curvato terminato, lobo oblongo convexo, disco crista mediana trifida instructo.

Hab. Ruwenzori (eastern side). On granite, 5300 ft., April (greater rains), 1894, No. 7552.

The slender flowering-stem (2½–3 ft. long) bears on its lower nodes subscarious bracts with edges united for two-thirds their length, and acute or acuminate apex; they are generally marked with small dark spots, and are much shorter than the internodes, being only 1⅓–2 in. long. The acute flowering bracts are nearly ½ in. long below, becoming shorter above. The dorsal sepal is 3½ lines by 2½, the lateral ones are 4 lines by 3, and the broad petals 6 lines long by 7½ broad. The rounded scarcely projecting wings of the lip are attached to the sides of the short thick column, and form an upward continuation of the large basal sac, of which the blunt spur (2 lines long) is a terminal process; the latter has a slight forward curve. The short terminal lobe (4 by 2½ lines) bears a large median crest, as described for *L. saccatus*, rising 1 line above the disc. The two roundish pollinia show an indication of further division, and are connected with the orbicular gland by a short band (½ line long). The roundish anther is bluntly apiculate.

Differs from the closely allied *L. saccatus* in its rather broader bracts, shorter and proportionately broader sepals, smaller petals, smaller oblong median lobe of lip, and thicker spur. Compared with *L. milanjianus*, another close ally, it has shorter broader sepals, which are not aristulate, broader petals, a smaller median lobe to the lip, and broader flowering bracts.

(To be continued.)

A REVISION OF THE NEW ZEALAND SPECIES OF COLOBANTHUS.

By T. Kirk, F.L.S.

1. C. quitensis Bart. in *Reliq. Hænk.* ii. 13; Hook. f. *Handbk. N. Z. Fl.* 54; Phil. *Cat. Pl. Vasc. Chil.* 87.

Hab. South Island: Nelson Mountains; Kowhai River, Canterbury; Otago, 2000–3500 ft. Also throughout the Andes; Amsterdam Island, &c.

2. C. Billardieri Fenzl in *Ann. des Wien Mus.* i. 49. Tufted, forming large patches rarely exceeding an inch in height, flaccid, grassy. Leaves ¼–⅓ in. long, linear-subulate, channelled above, tips acute or acicular; peduncles ¼–1 in. long, white. Sepals 5, ovate, acute or acuminate, scarcely exceeding the capsule. Disc narrow.—Hook. f. *Fl. Antarc.* i. 26; *Fl. Tasm.* i. 45; *Handbk. N. Z. Fl.* 25; Raoul, *Choix*, 48; Benth. *Fl. Aust.* i. 161; F. Muell. *Second Syst. Cens. Aust. Pl.* 46; Phil. *Cat. Pl. Vasc. Ch.* 87. *C. affinis* Hook. f. in *Hook. Journ. Bot.* ii. 410. *Spergula affinis*

Hook. *Ic. Pl.* t. 266. *S. apetala* Labill. *Pl. Nov. Holl.* i. 112, t. 142; DC. *Prodr.* i. 395.

Hab. South Island: Nelson to Southland. Stewart Island, Auckland and Campbell Islands, Antipodes Island, Macquarie Island. Chiefly at sea-level in the South. Ascends to 3000 ft. in Nelson and Canterbury.

Var. *alpinus.* Much larger than the type, but equally flaccid; forming small tufts 1–4 in. diam., with erect or spreading peduncles 1–4 in. long. Sepals ovate-acuminate. Leaves 1–2 in. long or more, with long acicular tips.

Hab. North Island: Ruahine and Tararua Mountains. South Island: Southern Alps, 1500–4500 ft. Also in Victoria, Tasmania, Chili, &c.

C. affinis Hook., figured in *Ic. Pl.* t. 266, differs from any form of *C. Billardieri* found in New Zealand in the broadly-ovate sepals only half the length of the capsule, and in the wide disc.

3. **C. Muelleri,** sp. n. A rigid glabrous plant, forming small tufts ¾–½ in. high. Leaves usually recurved, broadly channelled, with short acicular tips and evident midrib, ½–¾ in. long or more, rigid. Peduncles ¼–¾ in. long, often hidden amongst the leaves. Sepals 5, ovate, abruptly narrowed into channelled points with acicular tips, about one-third longer than the capsule. Disc very narrow.—*C. Billardieri* var. *platypoda* F. Muell. *Veg. Chat. Islands*, 11. *Stellaria uniflora* Banks & Sol. MSS. in Herb. Mus. Brit.

Hab. North and South Island: in lowland districts, but often rare and local; more plentiful on shingly beaches. Stewart Island.

I venture to refer the plant collected by Mr. Buchanan on Mount Camel, and by Banks and Solander at Totaranui, to this species, although I have not seen specimens. It is distinguished from *C. Billardieri* by the cartilaginous apiculate sepals, which are one-third longer than the capsule, as well as by the rigid habit.

Var. *multicaulis.* Rigid, much branched from the base, branches naked below. Leaves somewhat lax, spreading, linear-subulate, apiculate, about ¼ in. long. Peduncles scarcely exceeding the leaves. Sepals narrow-ovate, acute or mucronate, equalling the capsule.

Hab. South Island: interior of Otago, *J. Buchanan*!

I have only a few scraps of this interesting form, picked from amongst other plants in Mr. Buchanan's herbarium.

4. **C. canaliculatus,** sp. n. A small, tufted, much-branched plant ½ in. high, branches spreading. Leaves patent or slightly recurved, $\frac{3}{16}$ in. long, canaliculate, with stout marginal nerves, apiculate. Flowers ⅛ in. long, on very short stout peduncles, axillary or terminating short lateral branchlets. Sepals 5, ovate, acute or subacute, equalling the capsule. Disc thickened.

Hab. South Island: Central Otago, *J. Buchanan*!

5. C. REPENS Colenso in *Trans. N. Z. I.* xix. (1886), 260.

Hab. North Island: Hawkes Bay.

I have not seen specimens of this, which appears to be intermediate between *C. Muelleri* and *C. quitensis.*

6. **C. brevisepalus,** sp. n. Tufted, rigid, $\frac{1}{2}$–1 in. high, much-branched. Leaves densely imbricated, $\frac{1}{16}$–$\frac{1}{12}$ in. long, linear-subulate, with a broad base, concave above, rounded below, obtuse, mucronate. Flowers terminal, sunk amongst the leaves. Sepals 5, narrow ovate, convex or almost keeled, mucronate, slightly exceeding the capsule.

Hab. South Island: Mount Mouatt, Arvatere, 4000 ft., *T. Kirk.* Gorge Creek and Kurow, Otago, *D. Petrie*!

7. C. BENTHAMIANUS Fenzl in *Ann. des Wien Mus.* i. 49. About 1 in. high, densely tufted. Leaves rigid, $\frac{1}{6}$–$\frac{1}{4}$ in. long, channelled above, rounded beneath, with short acicular points. Peduncles very short, flowers distinctly exceeding the terminal leaves. Sepals 5, ovate-subulate, mucronate, rigid, equalling or slightly exceeding the capsule. Disc reduced to a mere line.—F. Mueller, *Second Syst. Cens. Austr. Pl.* 46; C. Moore, *Handbk. Fl. N. S. W.* 100; Phil. *Cat. Pl. Vasc. Chil.* 87. *C. subulatus* Hook. f. *Fl. Antarc.* i. 13, and ii. 247, t. 93; *Handbk. N. Z. Fl.* 25; Benth. *Fl. Austr.* i. 160. *C. pulvinatus* F. Muell. in *Trans. Phil. Vict.* i. 201, and *Pl. Vict.* 213, t. 11. *Sagina subulata* D'Urville, *Fl. Ins. Mal. in Mem. Soc. Linn. Par.* iv. 618 (not of Wimm.). *S. muscosa β. squarrosa,* and *γ. laricifolia* Banks & Sol. MSS. in Herb. Mus. Brit.

Hab. South Island: "Awatere Valley and Sinclair range, alt. 4000 ft.; Otago; Lake District," *Handbk. N. Z. Fl.* 25. Campbell Island.

The above description is drawn exclusively from Campbell Island specimens, as all that have come under my notice from the South Island appear to belong to *C. acicularis* Hook. f., the leaves and sepals having longer acicular tips, and the flowers being more completely hidden amongst the leaves than in the Campbell Island plant, the perianth of which is exactly represented by fig. 4, t. 93, in *Fl. Antarctica.* The drawing of the Falkland Island plant represents a more slender and lax habit than is exhibited by either New Zealand or Campbell Island specimens, while it differs still further in having tetramerous flowers.

8. C. ACICULARIS Hook. f. *Handbk. N. Z. Fl.* 25.

Hab. South Island: in rocky places from Nelson to Southland, 2500–5500 ft.

A more robust species than the preceding, with the flowers more completely hidden.

9. **C. Buchanani,** sp. n. Laxly tufted, glabrous; stems slender, 1–3 in. high. Leaves somewhat lax, $\frac{1}{4}$–$\frac{7}{16}$ in. long, linear-subulate with acicular points, membranous, concave above, convex below, patent or ascending. Flowers axillary on slender peduncles exceeding the leaves, or rarely shorter. Sepals 5, narrow linear-lanceolate, acute, one-half longer than the capsule. Disc narrow.

Hab. South Island: Otago, Mancherikia Valley, *J. Buchanan*!

10. C. MUSCOIDES Hook. f. *Fl. Antarc.* i. 14.

Hab. The Snares; Auckland and Campbell Islands; Antipodes Island; Macquarie Island.

AN ACCOUNT OF THE GENUS ARGEMONE.

By D. Prain.

(Continued from p. 135.)

The greatest difficulty in the treatment of the genus has been experienced in the limitation of its species. Thus in 1799 Lestiboudois distinguished as *A. alba* the white-flowered plant which Lamarck had separated in 1784 as a variety of *A. mexicana*: in 1812 Stokes distinguished as *A. sexvalvis* those specimens of *A. mexicana* with six placentas. This last "species" is certainly not a defensible one, for the number of valves in the capsule varies from four to six on the same plant. The name, however, was legitimately applied, and is not a mere synonym, like Moench's *A. spinosa* (1784); Salisbury's *A. versicolor* (1789); and Spach's *A. vulgaris* (1839)—three names indicating as many deliberate attempts to supplant the name used by Linnæus and Tournefort. Lestiboudois's *A. alba* was described and renamed *A. albiflora* in 1815 by Hornemann, and figured under Hornemann's name by Sims in 1822. In 1817 Rafinesque described as *A. alba* a plant that is not the same as Lestiboudois's *A. alba*; in 1821, however, and again in 1824, DeCandolle reverted to the Lamarckian view, and included not only Hornemann's *A. albiflora* (Lestiboudois's *A. alba*), but Rafinesque's one as well, in his *A. mexicana*. In 1823 James distinguished still another *A. alba*, somewhat different both from that of Lestiboudois and that of Rafinesque. But alike in America and in Europe the recognition of a white-flowered species apart from *A. mexicana* was during the first quarter of the present century very half-hearted, and most botanists in both hemispheres have been content to recognise in it only a variety (*albiflora*) of the best known yellow-flowered species. It must not, however, be overlooked that the cleavage is hardly the same in the two continents; the *A. mexicana* var. *albiflora* of DeCandolle (1821) is practically Lamarck's plant, and, even if it be held to include Rafinesque's one, is equivalent to *A. alba* and *A. platyceras*; the *A. mexicana* var. *albiflora* of Torrey (1828), which is, in the main, that of subsequent American authors, is the quite different *A. intermedia*.

In 1827 Link and Otto described as *A. platyceras* the plant which, though they did not know it, is the *A. alba* of Rafinesque, and in the same year Sweet described the perhaps distinct *A. grandiflora*; in 1828 Sweet separated from *A. mexicana* the yellow-flowered plant characteristic of Mexico, as opposed to that of the West Indies; this Mexican plant he named *A. ochroleuca*. In 1830 Sweet named, without describing it, *A. intermedia*, which, though Sweet did not know it, is the *A. alba* of James; in the same year Penny described as *A. Barclayana* a plant that is only a form of *A. ochroleuca*. In 1831 Hooker described as *A. rosea* a plant from Chili that is perhaps only a variety of *A. platyceras*; what is certainly only another form of *A. rosea* was described in 1833 as *A. Hunnemannii* by Otto and Dietrich. In 1834 Croom redescribed as *A. Georgiana* Lestiboudois's *A. alba* (Hornemann's *A. albiflora*); and A. Gray described in 1845 as *A. hispida* a plant that is perhaps, as most American botanists think, not specifically separable from *A. platyceras*. In 1854 *A. fruticosa* of Thurber, the only species whose validity it is impossible to dispute, was published. In 1855 Durand and Hilgard published as *A. munita* a plant that is certainly only *A. hispida* of Gray, and in 1886 Greene published as *A. corymbosa* one that is perhaps only *A. intermedia* of Sweet. Besides the forms enumerated there are two others which are more or less distinct: one is from the Sandwich Islands; this I have in the present paper referred to *A. alba*, but, perhaps rightly, Mr. Nuttall has proposed for it specific rank, under the name *A. glauca;* another from Northern Mexico has been issued by Mr. Pringle as *A. platyceras*, an impossible identification; this latter I have referred, as a temporary measure, to *A. intermedia;* but it is perhaps deserving of specific rank, and, if so, may be conveniently known as *A. stenopetala*.

There are thus at least eleven Argemones which are easily distinguishable, and which admit of more or less satisfactory definition. And, as a study of their bibliography and a perusal of the notes appended to their systematic diagnoses will show, it is not improbable that even more forms may yet be satisfactorily differentiated. But these forms are not by any means all of equal rank; in place, therefore, of giving in every case a specific value to their characters, I have only allowed specific rank to each of the separate groups of forms, assigning to the different Argemones of each group a merely varietal position, and leaving it to authors who can make a careful study of the genus on the lines adopted by Mr. Greene in his study of the genus *Eschscholzia*, to assess at its true worth the claim of each individual form to separate recognition. In the three most important works in which the genus has been defined,* the number of species admitted has been five or six; this estimate is apparently based on the purely compilatory and uncritical revision of the genus by Walpers,† for in the only serious attempt that has been made to review the species of *Argemone* Otto and Dietrich‡ have recognised eight. It is significant, too, that these last-named authors are the only botanists who have not given way to the tendency, against which Sir William Hooker§ warned botanists to be careful, of relegating to *A. mexicana* any form that it is difficult to localise. When, therefore, it is pointed out that the number of species recognised in this paper is only six, and that thus it is in accordance with the estimates referred to, care must be taken not to conclude that the treatment here adopted is in any way intended to distort the genus so as to support that estimate; the "species" of this paper are in reality aggregations of forms that probably most botanists would recognise as specifically distinct. What canons are applied in limiting the species admitted in the *Genera Plantarum* or in the *Histoire des Plantes* we have no means of judging; it is, however, evident, from the citation there of *A. Hunnemannii* as distinct, that in the *Natürlichen Pflanzenfamilien* the limitation is less rigid than that employed here.

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* Bentham & Hooker, *Genera Plantarum*, i. 52; Baillon, *Histoire des Plantes*, iii. 113; Prantl & Kündig in Engler, *Natürlichen Pflanzenfamilien*, iii. pt. 2, 141.

† Walpers, *Repertorium*, i. 109 (1842).

‡ Otto & Dietrich, *Allgemeine Gartenzeitung*, i. 298 (1833).

§ *Bot. Miscell.* ii. 207 (1831).

As regards the claim to recognition of *A. fruticosa*, dispute, as has been already said, is impossible. Its fruticose habit, its holly-like leaves, its capsules dehiscing nearly to the base, separate it unmistakably from all the others. In the rest we find the habit herbaceous, the leaves thistle-like, the capsules dehiscing only in the upper part. Indeed, it is a matter to be thankful for that generic rank has not as yet been claimed for *A. fruticosa*, seeing that the character afforded by its fruit is exactly that on which *alone* depends the separation of *Roemeria* from *Papaver* § *Rhœades*, and of *Cathcartia* from *Meconopsis*.

When, however, we examine the remaining forms, considerable difficulty is experienced. The general characters derived from habit and foliage are somewhat variable within each, and certain of the forms simulate others in a remarkable manner. Thus *A. stenopetala* repeats the habit and foliage usually present in *A. mexicana*, while *A. intermedia* in its southern form repeats those present in *A. ochroleuca*, and in its northern form (characteristic of the western prairies) those of *A. platyceras*. *A. alba* usually resembles *A. ochroleuca*, but sometimes imitates the northern form of *A. intermedia*, while *A. rosea* (the Chilian plant) imitates now *A. hispida* of the Rocky Mountains, and now *A. glauca* of the Sandwich Islands. If these general characters are to be relied on, there is nothing to be said against the view that would reduce the number of species of *Argemone* to two, viz., *A. fruticosa* and a second composite and very variable species. If, indeed, the commonly received reduction of *A. alba* to *A. mexicana* be insisted on, this wider reduction becomes a logical necessity. When, however, the subject is more closely investigated, we find that the general similarity in this last instance is rarely very great, and is never so marked as in the case of some of the forms usually accepted as distinct; there is, moreover, always a characteristic difference in the disposition of the bracts, the shape of the sepals, the size, shape, and colour of the petals, and, above all, in the shape and consistence of the fruit. Indeed, beyond the fact that both are Argemones, there is nothing in favour of their reduction to one species. The same remark applies with equal force to the identification of *A. intermedia* with *A. ochroleuca*.

(To be continued.)

TWO NEW TROPICAL AFRICAN EBENACEÆ.

By W. P. Hiern, M.A., F.L.S.

There appear to be only two species of this family represented in the collections made by Mr. Scott Elliot in the Ruwenzori expedition: both were obtained in the Shire region of the Mozambique district from September to December, 1894. Though closely allied to previously known species, they are, I think, sufficiently different to require new names.

Euclea urijiensis Hiern, sp. n. E. subglabra, ramulis fusco-cinereis alternis oppositis vel verticillato-approximatis, foliis sæpius oblanceolatis firmiter coriaceis apice rotundatis basin versus cuneatis margine anguste revoluto, (in sicco) undulatis breviter petiolatis, floribus masculis tetrameris in racemis axillaribus pollicaribus dispositis, calycis brevis lobis e basi latâ apiculatis, corollâ $\frac{1}{2}$-ellipsoideâ quadrifidâ, staminibus 12–14, ovario 0.

Apparently a shrub, diœcious, nearly glabrous, but with a few whitish hairs scattered over the branchlets, the young leaves, and the inflorescence; the branches are of a dark ashy colour, alternate, opposite, or crowded 3 or 4 together in irregular whorls; the leaves are oblanceolate or occasionally rather obovate, firmly coriaceous, glabrescent, rather pale green and with slender reticulation in relief on both surfaces, glossy at least on the upper surface, rounded at the apex, gradually tapering to the base, 2–3$\frac{1}{4}$ in. long by $\frac{7}{16}$–$\frac{15}{16}$ in. wide, with the margin narrowly revolute, and in the dry state wavy with small undulations; the petiole is $\frac{1}{8}$–$\frac{1}{5}$ in. long. On the male plant the flowers, which are tetramerous and half-ellipsoidal and measure $\frac{1}{6}$ in. in length and $\frac{1}{8}$ in. in diameter, are arranged about 8–14 together in axillary rather slender and lax racemes of $\frac{3}{4}$–1 in.; the bracteoles are narrow, shorter than the pedicels, and caducous; the pedicels measure $\frac{1}{8}$–$\frac{1}{5}$ in. in length, are slender, and mostly spread rather widely; the calyx is short and cleft into 4 lobes, broad at the base and pointed at the apex; the corolla much exceeds the calyx and is divided nearly half-way down into 4 rounded lobes; the 12–14 stamens are inserted by the short and unequal filaments at or near the base of the tube of the corolla or on the receptacle; the anthers are apiculate, and not absolutely glabrous, though nearly so; the ovary is deficient. Female plant not seen.

Uriji Valleys, Karagwe, 4000–5000 ft. alt., Sept. 1894, No. 8180.

This species is nearly related to *E. microcarpa* Gurke, from Kilimanjaro, but is larger in most parts, and not so glabrous.

Diospyros shirensis Hiern, sp. n. D. foliis alternis obovatis vel ovali-obovatis apice obtusis rotundatis vel interdum obtuse subacuminatis basi obtuse angustatis pergameno-chartaceis ciliolatis planis, supra griseo-viridibus paulum pubescentibus, infra pallide flavescenti-viridibus sparsim pubescentibus, breviter petiolatis; floribus masculis ternis in cymis axillaribus brevibus pubescentibus dispositis, calyce tubuloso-ovoideo brevissime lobato extus pubescente, corollâ fere glabrâ quadrifidâ, staminibus 15 glabris, ovario 0.

A diœcious shrub or tree, with the branches spreading more or less widely, straight, alternate or rather closely approximated, of a pale ashy hue, glabrate, but the branchlets clothed with a pale or tawny pubescence, and leafy; the leaves are alternate, mostly obovate, and of a thinner substance than usual in most species of the genus, obtuse at the apex, not cordate at the base, rather pubescent, especially on the lower surface, ciliolate, 2–3 in. long by 1–1$\frac{2}{3}$ in. wide; the petiole is pubescent and measures $\frac{1}{8}$–$\frac{1}{4}$ in. long. On the male plant the flowers before expanding measure scarcely $\frac{1}{2}$ in. long, and are arranged in the upper axils in short tawny-pubescent 3-flowered cymes; the common peduncle is $\frac{1}{8}$–$\frac{1}{5}$ in. long, and the pedicels are still shorter; the caducous tawny-pubescent bracteoles, like very small leaves, are placed at the apex of the peduncle, and about equal or slightly exceed it in length; the calyx is tubular-ovoid, about $\frac{1}{4}$ in. in length and $\frac{1}{6}$ in. in diameter, very shortly and vaguely 4-lobed at the apex, tawny-pubescent outside, and smooth and appressedly hairy inside; the corolla is glabrous or very nearly so, 4-cleft, with the lobes rounded at the apex, and much contorted sinistrorsely in æstivation; the stamens were 15 in all the flowers that were examined, and glabrous, with anthers about $\frac{1}{16}$ in. long, and the rather unequal filaments not longer than the anthers; there was no trace of an ovary, nor any hairs in its place. Female plant not seen.

Upper Shire, Fort Johnstone Flats, December, 1894, No. 8433; Shire Highlands, Ruo, December, 1894, No. 8674; Shire Zambesi, Ruo, December, 1894, No. 8681.

The affinity of this species is with the larger-leaved *D. senensis* Klotzsch, which also occurs in the Mozambique district, and of which it may prove to be a variety or state.

FOSSIL PLANT-REMAINS IN PEAT.

By Antony Gepp, M.A., F.L.S.

The following notes are published not as presenting any novelty to those who read geological literature, but in the hope that they may be of interest to botanists as indicating a line of research which is as yet far from being exhausted, and is capable of providing attractive employment for the reasoning faculties at a time when a botanist's ordinary vocations are at a minimum.

Some weeks ago I received from Mr. R. F. Damon, of Weymouth, some specimens of peat which had been washed up on the sea-shore at that place during the winter-gales. Mr. W. Jex, who collected the specimens, had taken a great deal of trouble in separating out from the peaty matrix some of the contents. Amongst these were six species of mosses, the rootstock of a fern and of another plant, some squashed succulent stems, and several seeds and fruits. The rest of the material consisted of compressed lumps of peat, rather like oil-cake in appearance, and in some cases punctured, as it were, with the point of a parasol. These perforations were the work of a mollusc known as *Pholas*. Five of the mosses were easily recognised. The other remains gave more difficulty, and in most cases turned out to be very different from what they at first sight appeared to be. I am indebted to Mr. Carruthers and Mr. E. G. Baker for kind assistance in the determination of the specimens; but I am under a special debt of obligation to Mr. Clement Reid, of the Geological Survey, who has made this class of work one of his pet studies during the last fifteen years, and of whose papers I would call attention to three, which, owing to their place of publication, are likely to have escaped the notice of botanists. One of these, upon a lacustrine deposit at Hoxne, in Suffolk, was written in conjunction with Mr. H. N. Ridley, in *Geol. Mag.* dec. iii. vol. v. (1888), p. 441; and the other two, on pleistocene deposits on the south coast, occur in *Quart. Journ. Geol. Soc.* vol. xlviii. (1892), p. 344, and vol. xlix. (1893), p. 325. Without Mr. Reid's freely accorded help I should have fallen into the most lamentable errors, and should have been unable to supply the tags of information which occur in this paper.

The following is a list of the plant-remains which admit of identification:—

Nymphæa alba L. (16 seeds).
Prunus Padus L. (2 stones).
Myriophyllum spicatum L. (achene).
Œnanthe sp.? (stems).
Sambucus nigra L. (2 seeds).
Alnus glutinosa Gaertn. (branch).
Ceratophyllum demersum L. (fruit).
Sparganium ramosum Huds.? (fruit).
Potamogeton natans L. (92 fruits).
P. lucens L. (3 fruits).
P. perfoliatus L. (6 fruits).
Scirpus maritimus L.? (fruit).
Carex sp. (florets).
Phragmites communis Trin. (rootstock).
Osmunda regalis L. (rootstock).
Sphagnum cymbifolium Ehrh.
S. subsecundum Nees (perhaps).
Mnium hornum L.
Aulacomnium palustre Schwaegr.
Hypnum cupressiforme L.
H. Schreberi Willd.

The mosses consist of leafy stems. *Sphagnum* occurs in some quantity, and the *Aulacomnium* is surprisingly well preserved. Of the phanerogamic remains, some flattened hollow stems bearing wide leaf-scars and traces of axillary buds have been doubtfully referred to *Œnanthe Phellandrium*. *Sium latifolium* would be an equally plausible guess. What appears to be a half-decayed fruit, most nearly resembles that of *Sparganium ramosum*. Though only the testa of the seeds of *Nymphæa alba* is preserved, the identity is rendered unmistakeable by the presence of the lines of minute and peculiar dots on the surface. The preponderance of the fruits of *Potamogeton natans* (87 on the present occasion) is characteristic of these deposits. In common with the fruits of other Potamogetons, of *Ceratophyllum*, *Myriophyllum*, and other aquatic plants, they offer great resistance to decay.

In order to soften the hard lumps of peat, they were, by Mr. Reid's advice, boiled gently for about twelve hours in a weak solution of sodium carbonate (a process which, like that of cooking cabbage, is not a savoury one), and were then carefully broken up and washed several times, until the impalpable colouring matter had all been got rid of. The mosses and seeds were then easily found and picked out. The residue consisted of bits of wood and epidermis, with a large quantity of fragments of cuticle, wings and legs of beetle, to which I attribute the unpleasantness attending the operation of boiling.

The present specimens were washed up during south-easterly gales, and appear to have come from submerged forests in Weymouth Bay, where the fishermen sometimes find pieces of peat in their nets. There is nothing to fix the age of the deposit, unless it be the presence of *Nymphæa* seeds, and there be any truth in the theory that *Nymphæa* was introduced by the Romans. The absence of all traces of detritus from the deposit shows that the latter was laid down in stagnant water.

There is a vast quantity of peat ever going to waste on our shores; and to any one who may feel inclined to analyse it I would say that it is expedient that he should make himself acquainted with all the parts of aquatic plants, and should collect the seeds of these and of water-side plants, keeping them for convenience of examination in small glass tubes. Moreover, he should have a good memory for isolated facts; for seeds do not admit of any simple scheme of classification. And, finally, he must not expect to find any information about them in the ordinary floras.

MR. CARRUTHERS'S RETIREMENT.

Five years ago it was my lot to chronicle the changes which resulted on the retirement of Prof. Oliver from his official connection with the Kew Herbarium. It now becomes my duty to announce that Mr. Carruthers, having reached the limit of age allowed by the rules of the Civil Service, abandoned his long connection with the British Museum on the 29th of May. The news will come upon botanists with some suddenness, owing to the fact that the Trustees of the Museum had recommended the retention of Mr. Carruthers's valuable services for a further period; but the Treasury declined to grant their recommendation.

Mr. Carruthers entered the Museum on Aug. 25th, 1859, to fill the vacancy caused by the succession of Mr. J. J. Bennett to the post of Keeper on the death of Robert Brown. He was then the only assistant in the Department of Botany, the work of which to a considerable extent devolved upon him; and when Mr. Bennett in his turn retired from the service, it was natural and fitting that Mr. Carruthers should be promoted to the vacant post. Not long before this he had received a flattering offer from Asa Gray to accompany him to Harvard, and take part in the development of botanical work there. It was characteristic of Mr. Bennett that he in no way attempted to influence his assistant with regard to the acceptance of this offer.

Immediately after his appointment (which was dated Feb. 15th, 1871) Mr. Carruthers was called upon to appear before the Royal Commission on Scientific Instruction, which was then sitting. Opinion was openly expressed that its deliberations might result unfavourably to the British Museum, and especially to the Department of Botany. Mr. Carruthers gave evidence on the 28th of April, and had no difficulty in rebutting the adverse statements, many of them based on hearsay evidence, which were made in regard to the Department. In the preparation of his case he had the advantage of the help of Dr. Trimen, who had been appointed assistant two years previously. At the time of this appointment, two young men of promise were anxious to obtain botanical work, and it was after much deliberation that Dr. Trimen rather than Mr. Dyer was chosen for the post.

The future historian of the botanical establishments of this country will find ample material in the evidence tendered by Sir Joseph Hooker, Mr. Bentham, Mr. Ball, and Mr. Carruthers, published in the Reports of this Commission. The three first-named were strongly opposed to the existence of a Department of Botany at the British Museum, and *Nature* lent itself to the advocacy of their policy. The sufficiency of Mr. Carruthers's defence is manifest from the fact that the Department remained untouched. The historian must not overlook the Appendix to the Report, in which he will find Mr. Ball's evidence dissected by Mr. Carruthers in a style which may be thought somewhat merciless, though it cannot but be owned that the provocation was great. I came into the Department in September, 1871, while the controversy was still raging. The first thing that struck me was the perfect cordiality and frankness which Mr. Carruthers showed towards his subordinates—qualities which have been conspicuously manifest in all his relations with his staff during his twenty-four years' Keepership.

The permanence of the Department being secured, Mr. Carruthers devoted himself to its development. The first necessity was an assistant to undertake the arrangement of the cellular cryptogams, and for this purpose Mr. George Murray, who had studied at Strasburg under De Bary, was engaged: he entered the Department on Oct. 18th, 1876. Previous to this, however, the legal proceedings as to the disposal of Dr. Welwitsch's collections, in accordance with the will of that botanist, had caused Mr. Carruthers much anxiety. Readers of this Journal were kept acquainted with the facts of the case, and its satisfactory termination, after nearly three years' litigation, is duly chronicled in our volume for 1873 (pp. 380-2). The nation is indebted to Mr. Carruthers and his fellow-executor, Mr. Justen, for the splendid set of Dr. Welwitsch's Angolan collections now in the British Museum. The enumeration and description of these was undertaken by Mr. Hiern, but his removal from London caused him to abandon the work, after a considerable portion had been done. It will be pleasant news to botanists that Mr. Carruthers has just succeeded in inducing Mr. Hiern to resume the work, and there is every reason to hope that this fitting monument to Dr. Welwitsch's industry, and to Mr. Carruthers's activity on behalf of the institution he represented, will be completed at no distant date.

The next important demand upon Mr. Carruthers's energies was connected with the transference of the Department of Botany to the Natural History Museum: this took place in 1880. Those who remember the small crowded gallery, the insufficient accommodation, and inconvenient arrangements, at Bloomsbury can alone fully appreciate the extension which took place when the botanical collections were moved to South Kensington. But the superintendence of the moving and rearrangement of these was not Mr. Carruthers's most important work. As a compensation for being deprived of the advantages of the British Museum library, the Government made a large grant towards the formation of a natural history library in the new building, and each department was allotted a handsome sum for expenditure in connection with its special work. Mr. Carruthers's knowledge and appreciation of botanical literature was exercised to such admirable effect that it may be doubted whether a finer botanical library exists than that of the Natural History Museum.

In 1887 Mr. Carruthers became President of the Linnean Society, and it fell to his lot to superintend its centenary, which took place in 1888. Not only then, but throughout his term of office, Mr. Carruthers took the greatest interest in the affairs of the Society. Fourteen years before, a crisis had arisen in its history, which, as will be seen by a reference to this Journal for 1874, was not unattended by painful incidents and serious differences of opinion. No one, however, now doubts that the result of the alterations then introduced was beneficial, and these results were due in no small measure to Mr. Carruthers's action. His presidency was in every way a marked success, and it is pleasant to record that it is to be commemorated by a portrait, to be placed in the rooms of the Society, which Mr. Hay has just been commissioned to paint.

If we contrast the present state of the Department of Botany with its condition when Mr. Carruthers assumed the Keepership, we shall be able to form some notion of its development. The two assistants have increased to five. The important special herbarium of British plants, the separate collections of fruits and woods, the useful series of plates and drawings, the arrangement of the valuable collection of original drawings—one of the finest in existence—and of MSS., the development of the public galleries, have all been carried out under his guidance. He has secured for the nation many important collections, and has immensely developed the cryptogamic portion of the herbarium, which at Bloomsbury occupied only one small gallery. Important contributions to science, such as Mr. Crombie's Enumeration of British Lichens and Mr. Lister's Monograph of Mycetozoa—both recently noticed in these pages—have been issued under his editorship. He has assisted in every possible manner those who have desired to consult the collections, and—if a fault in that direction be possible—has been almost too ready to answer enquiries of the most trivial nature.

With his assistants—or, as he always preferred to call them, his colleagues—Mr. Carruthers's relations have always been most cordial. During my twenty-four years' association with him, I can remember no occasion in which the slightest friction of any kind has arisen. In my own case this is the more noteworthy inasmuch as there are matters upon which we differ very strongly; but these have never in the remotest degree affected our official relationship, nor marred the friendship which has for so many years existed between us.

Our official relationship has now ceased; the ties of friendship are not likely to be severed by his removal, though it is impossible not to feel regret that the almost daily intercourse of so many years should be interrupted. Yet it is no small satisfaction to know that a change of companionship, seldom a pleasant thing to those in middle life, will not result from Mr. Carruthers's withdrawal. In the usual course of events, it might have been expected that I should succeed Mr. Carruthers as Keeper, but for many years I have felt that this would not be desirable. It is unnecessary for me to enter into the personal reasons which led me to this conclusion; but I may say that for many years past, matters which have seemed to me of sufficient importance to demand such attention as I could devote to them have occupied most of my leisure time, and have prevented me from taking part in scientific work, other than that connected with my official duties. I have watched with interest the growing position which Mr. Murray has secured for himself among workers in many directions, and it has been impossible not to recognize in him one who from his scientific attainments was admirably suited to succeed Mr. Carruthers, and one with whom the cordial relations so long existing in the Department will be maintained and strengthened. Mr. Murray's appointment does much to mitigate the feelings of regret with which Mr. Carruthers's retirement is accompanied. His uniform brightness, his geniality, his readiness to help, and his unfailing courtesy, will secure for him the good wishes of his numerous friends in his new post: and among those wishes none are more hearty and sincere than my own.

James Britten.

SHORT NOTES.

Monœcious form of Mercurialis perennis.—I have this spring found three male plants of this species bearing one or two female flowers, and one female bearing a male flower. Mr. W. R. Linton tells me he also has found it, though decidedly scarce, about Shirley. The first form is more easily noticed, at least late in the season, when the fruit becomes conspicuous at the end of the long male peduncle; but, in spite of a good deal of careful search, I have only discovered these four specimens. I do not see the monœcious form mentioned in any books, and suspect it is merely accidental.—A. H. Wolley Dod.

FRITILLARIA MELEAGRIS IN WORCESTERSHIRE.—*Fritillaria Meleagris*, new to Worcestershire, has been sent me by Prof. Poynting, F.R.S. (of Mason College), from Alvechurch, near Redditch.— WM. MATHEWS.

GALEOPSIS LADANUM L. — Following up the note on this in the May number of this Journal, I found *G. intermedia* Vill., in 1893, in E. Derbyshire, near Bolsover, on arable land. I have *G. angustifolia* Ehrh. from Oxford (Wychwood), and Hunts (Offord). — WM. R. LINTON.

SPHENOPHYLLUM.—In your notice (p. 126) of the paper by Prof. Williamson and myself on the Organisation of the Fossil Plants of the Coal-measures, you say:—"It deals with the stems, foliage, and fruit of *Calamites*, if we may include in the foliage of *Calamites* the genus *Sphenophyllum*." I wish it to be clearly understood that this is *not* the view of the authors of the paper. On the contrary, we consider that the facts brought forward by us make it quite evident that *Sphenophyllum* is a perfectly independent genus, without even any near affinity with *Calamites*. This is also the opinion of M. Renault.—D. H. SCOTT.

[We did not intend to convey the impression which Dr. Scott deduces from our notice of the paper in question, but as he considers the passage is open to misunderstanding, we willingly insert his note.—ED. JOURN. BOT.]

NOTICES OF BOOKS.

The London Catalogue of British Plants. Ninth Edition. London: Bell & Sons. 8vo, pp. 50. Price 6d.; cloth (interleaved), 1s.

THE eighth edition of the *London Catalogue* appeared in 1886. It was reissued, with a few corrections, in 1890, but no attempt was made to bring it up to date; and the present issue therefore summarizes the changes which have taken place in the views of British botanists during the last nine years. Readers of this Journal have been kept *au courant* with these, and have marked with varying feelings the numerous additions to critical genera as one after another comes into favour, or, more properly speaking, attracts attention. But it is only when we glance down the *Catalogue* that we realize the rapidity of development which has attended the study of certain genera—*Hieracium*, for instance, which we may take as an example.

In 1886 we had 40 species of *Hieracium* and 18 varieties, occupying a column of the *Catalogue*. After nine years we find the list extended to 104 species (five represented by varieties, not by the type), 114 varieties, 2 hybrids, and 1 form—making a grand total of 221 names, and occupying nearly five columns. Mr. Hanbury—who may be styled the hieraciarch of the new cult—is responsible for no fewer than 27 species and 35 varieties; the Messrs. Linton, either singly or together, claim 6 species and

7 varieties; Mr. Marshall is sponsor for one of each, Mr. Beeby for a species, and Mr. Purchas for a variety. If to these we add the numerous Backhousian species, we shall be justified in claiming for English botanists a due recognition of persevering industry.

It would ill become us to speak disparagingly of these species of *Hieracium*. Mr. Hanbury has made a careful study of them, both in the field and under cultivation, for many years, and our best critical botanists combine to swell the list. Moreover, we remember the severe reproof administered by Mr. Beeby,* and later by Mr. Marshall,† to those who ventured to speak disrespectfully of these plants in an earlier stage of the development of the list; nor can we repudiate our own share (whether of praise or blame) in introducing them to the world, for a large number—perhaps most of them—have seen the light in the pages of this Journal. Yet it is impossible to avoid a suspicion that a considerable reduction will one day take place in the number of forms considered distinct. The new creations are sometimes treated by their maker with as scant ceremony as Queen Elizabeth manifested towards her bishops. In Mr. Hanbury's "Tentative List," for example, which was issued with this Journal for last August, we find "*H. Lintoni* F. J. Hanb." with the remark appended, "See accompanying notes." But when we carry out the direction, we find "*H. Lintoni* is for the present withdrawn,"‡ nor has it yet reappeared. No one would wish to disparage careful observation and study of closely allied forms in critical genera, but it may be permitted to doubt whether some reticence might not be observed in their publication.

We have not space to enter upon the consideration of the revised lists of *Rubus* and *Rosa* (by Mr. Moyle Rogers), and the former has already been commented upon by its reviser in this Journal.§ Of *Salix* two arrangements are given, one drawn up by Dr. Buchanan White, the other by the Rev. E. F. Linton. Mr. Arthur Bennett has revised *Potamogeton* and *Carex;* Mr. Marshall has undertaken *Epilobium*, which now boasts 12 species and 33 hybrids, and has made suggestions on the Festucas: we note with some amusement that *Festuca heterophylla*, whose claims to nativity Mr. Marshall defended with some warmth in our pages,‖ is printed in italics as an "evident introduction." The Messrs. Groves have revised the *Characeæ* and *Batrachium;* Mr. Beeby is responsible for *Viola*, in which a good many changes occur, but not, we understand, for *Juncus*, which is credited to him, and which contains one of the very few misprints—"obtusifolius" for "obtusiflorus"—which we have noted. Other botanists have contributed notes and suggestions, many of which have been adopted.

Certain necessary alterations in nomenclature have been made, of which the following are the more noteworthy changes of genera; the additions of the dates of publication will show the grounds on which these have been made:—

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* *Journ. Bot.* 1893, 66. † Id. 1894, 290. ‡ Id. 227.
§ Id. 1895, 45, 77, 100. ‖ Id. 1889, 249 1890, 47.

1886.		1895.
Nuphar Sm.	=	Nymphæa L.*
Nymphæa L.	=	Castalia Salisb.*
Corydalis Ventenat, Choix des Plantes, xix. (1803).	=	Neckera Scopoli, Introd. 313 (1777).
Capsella Medic, Pflanzeng. i. 85 (1792).	=	Bursa Weber, in Wigg. Prim. Fl. Holsat. 47 (1780).
Lepigonum Wahlberg, Fl. Gothob. 45 (1820).	=	Buda Adanson, Fam. des Plantes, ii. 507 (1763).
Silybum Vaillant, ex Adans. Fam. des Pl. ii. 116 (1763).	=	Mariana Hill, Veg. Syst. iv. 19 (1762).
Phyllodoce Salisbury, Parad. Lond. t. 36 (1806).	=	Bryanthus S. G. Gmelin, Fl. Sibir. iv. 133 (1769).
Dabœcia D. Don, in Edinb. N. Phil. Journ. xvii. 160.	=	Boretta Necker, Elem. Bot. i. 212 (1790).
Mertensia Roth, Catalect. i. 34 (1797).	=	Pneumaria Hill, Veg. Syst. vii. 40 (1764).
Calystegia Brown, Prodr. 483 (1810).	=	Volvulus Medic, in Staatsw. Vorles. Churpf. Phys.Oek.Ges. i. 202 (1791).
Leersia Solander, ex Swartz, Prod. Ind. Occ. 21 (1788).	=	Homalocenchrus Mieg, ex Haller, Stirp. Helv. ii. 201 (1768).
Corynephorus Beauvois, Agrost. 90 (1812).	=	Weingærtneria Bernhardi, Syst. Verz. Erf. 23 (1800).

For the changes in specific names rendered necessary by the adoption of these genera reference must be made to the Catalogue itself. It may, however, be noted that in two cases (*Boretta* and *Volvulus*) the authors of the genera did not formulate a new specific combination, and the authorities cited for the species were the first to do so. The plant familiar to us as *Spergularia rupestris* has not hitherto been placed under *Buda*, and Mr. Hanbury's name will have to be cited for the new combination. We are afraid that he must also be held responsible for the ugly and unnecessary *Bursa Bursa-pastoris*, which he attributes to Weber, who, however, took *pastoris* as the specific name, so that *Bursa pastoris* is the correct designation for the plant.

The changes in specific names are fewer than might have been expected, seeing that since the eighth edition of the Catalogue was published, the appearance of the *Index Kewensis* has brought together much information bearing upon matters of synonymy and priority. Perhaps the most startling is the substitution of "*Carex Hudsonii* Ar. Benn." for *C. stricta* Good. The new name is indicated by Mr. Bennett in this Journal for 1889, p. 28, where it is shown that *C. stricta* Good. cannot stand. But a reference to Richter's

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* The reasons for these changes are fully set forth in *Journ. Bot.* 1888, 6–10.

Plantæ Europeæ (1890) shows a copious synonymy for the plant, and a selection of names which take precedence of *Hudsonii*. According to Richter, the oldest name for the species, preceding Goodenough's by nine years, is *C. elata* Allioni, Fl. Pedemont. ii. 272 (1785); and, unless Allioni's specimens should show reason to the contrary, the bibliography cited by Allioni and Goodenough makes it clear that this must be retained. Another change is in *C. depauperata*, a name cited by Mr. Jackson (and generally) as published by Goodenough in Trans. Linn. Soc. ii. 181 (1794). But this had been published at least twice previously to this date—first by Curtis (name only) in his *Catalogue of Plants cultivated in the London Botanic Garden* (1783, p. 92, no. 228), and then by Stokes in With. Arr. ed. 2, ii. 1049 (1787). Mr. Bennett substitutes for this *C. ventricosa* Curt. (Fl. Lond. fasc. vi. t. 68). This no doubt takes precedence of Goodenough's name, for Goodenough cites it as a synonym; but we are doubtful whether it can supplant *C. depauperata* Curt. Cat. (1783). Mr. W. A. Clarke has shown* that the date of *C. ventricosa* is doubtful, but in the description accompanying the plate Curtis says:—"The late Rev. Mr. Lightfoot, who had seen it growing with me, was pleased to call it *C. depauperata*, from the paucity of its flowers, *a name in which we sometime acquiesced;* but, on maturer consideration, we think the name we have now given it more expressive of its principal character." This seems to us to imply that this description is later than the *Catalogue*, and that the plant should be called *C. depauperata* Curt. Cat. 92 (1783). The statement that Lightfoot suggested the name does not appear in the *Catalogue*, and cannot, we think, be taken into consideration in citing the authority for the species. Mr. Clarke writes to point out that *Coronopus procumbens* Gilib. Fl. Lituan. ii. 52 (1781), antedates *C. Ruellii* All. Fl. Pedem. i. 256 (1785).

Other alterations will attract observation, upon which space will not allow us to dwell. It may safely be assumed that none have been made without consideration, and few without sufficient reason.

The new Catalogue contains forty-eight pages as against forty of the eighth edition, and is excellently printed on good paper. Mr. Hanbury deserves, and will no doubt receive, the thanks of British botanists for having taken upon himself the financial and editorial responsibility of this indispensable adjunct to the herbarium, and invaluable companion of the field-botanist.

The British Moss-Flora. By R. Braithwaite, M.D., F.L.S., &c. Part xvi. April, 1895. London: published by the author at 303, Clapham Road. Price 6s. Pp. 221–268; tabb. 75–84.

How tedious and prolonged an undertaking it is to monograph the plants of a given region, especially when the work has to be done in the scanty leisure time of a busy professional man, is well known to every one who has attempted such work, and to many who have not. Of course, when the material to be examined is limited in quantity, the task is comparatively light. But when the region has been well explored, and great masses of material have been collected, when the determinations of one's predecessors have been made either incorrectly or in accordance with the systems of different schools of botanists whose notions of species are as varied as their systems of classification, and when the species themselves are linked together by numerous intermediate forms; then the task becomes one which should be allotted to the born genius, or, in the absence of such, must be entrusted to some industrious but less transcendently gifted person who by the exercise of infinite care and painstaking may be expected to bring the work eventually to a happy conclusion.

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* *Journ. Bot.* 1895, 113.

Now the Mosses of the British Isles have, thanks to the active researches of collectors, accumulated during the present century, and called for a thorough revision. It is much to Dr. Braithwaite's credit that he has already brought to completion the second volume of our standard Moss-Flora, and with it the more difficult and less interesting section of the group, *viz.*, the *Acrocarpi*, which form about three-fifths of the whole group. The *Pleurocarpi* alone now require to be monographed; unless indeed Dr. Braithwaite should think fit to finish the Flora with a new treatment of the *Sphagna*, which would be for him a far lighter task than for any other British bryologist, as it would mean only a revision of the critical work he has already published on the subject.

The present part contains two families—*Meeseaceæ* and *Mniaceæ*, as to the treatment of which a few remarks may be made. Dr. Braithwaite follows Lindberg in dropping the use of the name *Aulacomnium*, and breaking the genus into two—*Gymnocybe* Fries, with two species (*G. palustris* and *G. turgida*), and *Orthopyxis* P. Beauv., with one species (*O. androgyna*). He describes fourteen species of *Mnium*, and has drawn some unusually pretty figures of them. He has replaced the earlier name of *M. serratum* Schrad. (1791) by *M. marginatum* P. Beauv. (1805), either because there is a doubt as to what Schrader's plant really was, or because *marginatum* was the original specific name under which Dickson put the plant in its original genus—*Bryum*. Dr. Braithwaite points out the confusion that has prevailed between *M. riparium* and *M. orthorhynchum*, the former of which has laxer leaves with larger cells. The replacement of *M. affine* Bland. (1804) by *M. cuspidatum* Neck. (1770) is unfortunate, as it necessitates a change in the case of another species, *viz.*, from *M. cuspidatum* Hedw. (1801) to *M. silvaticum* Lindb. (1867). Confusion between the two plants is sure to arise. An additional British species is *M. Seligeri* Juratzka, which used to be confused with *M. affine β. elatum* Br. et Sch. The older name *M. pseudopunctatum* Br. et Sch. (1843) takes the place of the subsequent *M. subglobosum* of the same authors.

In the Supplement are four species which are additional to vol. i. These are *Catharinea Haussknechtii* Broth. (not "Hausknechtii," as Dr. Braithwaite spells it), *Mollia brevifolia* Braithw., *Barbula* *icmadophila* Schimp., and *Cinclidotus riparius* Arnott. These, though more or less rare, have probably been mistaken by collectors for species which they closely resemble. *Dicranum undulatum* Ehrh. was discovered in England just in time to be included at the end of vol. i. The promised figure of it is now given on tab. 84. The var. *zonatum* is now separated from *Ditrichum homomallum*, and restored to specific rank under the name *D. zonatum* Limpr.

There are three pages of Addenda in the form of notes and new localities. In connection with the latter, the names of Dixon, Barnes, and Binstead are very much to the fore. There is also an index to vol. ii., and a classified list of the species.

A. Gepp.

ARTICLES IN JOURNALS.

Bot. Centralblatt (Nos. 17–21).—M. Behun, 'Zur anatomischen Charakteristik der Santalaceen.' — (No. 22). M. Britzelmayr, 'Materialien zur Beschreibung der Hymenomyceten.'

Bot. Gazette (Mar. 16).—W. C. Stevens, 'Apparatus for Physiological Botany' (4 plates). — C. Robertson, 'Flowers and Insects.' G. P. Clinton, *Cæoma nitens* & *Puccinia Peckiana*.—(Ap. 20). W. F. Ganong, 'Present problems in the *Cactaceæ*.' — C. Robertson, 'Flowers and Insects.' — W. Deane, 'Herbarium Notes.' — E. B. Uline & W. L. Bray, 'N. American *Amarantaceæ*.' — J. Schneck, *Cleome spinosa*. — G. H. Shull, *Enslenia albida* (1 pl.). — F. H. Blodgett, Bulb of *Erythronium americanum* (1 pl.).

Botanical Magazine (Tokio). — (Ap. 20). M. Shirai, *Villebrunea pedunculata*, sp. n. (plate).

Botaniska Notiser (häft 3). — O. G. Blomberg, 'Bidrag till kännedomen om lafvarnas utbredning m. m. i Skandinavien.'— A. G. Eliasson, 'Fungi Suecici.' — A. Y. Grevillius, 'Ett abnormt fall af skottbildnung hos *Antennaria dioica*.' — E. Nyman, 'Några ord om Areskutans fjällhed.'—Id., 'En för Sverige ny *Potentilla*.'

Bull. Torrey Bot. Club (Ap. 18). — G. V. Nash, 'Some Florida Plants.'—W. M. Canby, 'J. H. Redfield' (July 10, 1815–Feb. 27, 1895: portrait). — C. S. Boyer, 'A fossil marine Diatomaceous Deposit at St. Augustine, Florida.' — S. M. Tracy & F. S. Earle, 'New parasitic Fungi.'

Erythea (May 1). — E. L. Greene, 'Novitates Occidentales.'— Id., 'Corrections in Nomenclature.' — F. E. Lloyd, *Viola Macloskeyi*, sp. n.—P. Dietel, 'New N. American *Uredineæ*.'

Journal de Botanique (Ap. 1).—C. Flahault, 'Gaston de Saporta' (July 28, 1823–Jan. 26, 1895).—C. Sauvageau, '*Hydrurus fœtidus* à Lyon.' — (Ap. 1, 16). E. Belzung, 'Marche totale des phénomènes amylochlorophylliens.' — (Ap. 16). C. Sauvageau, '*Ectocarpus tomentosus*.' — (May 1). P. Hariot, 'Algues du golfe de Californie.'

Oesterr. Bot. Zeitschrift (May).—J. von Sterneck '*Alectorolophus*' (cont.).—J. Pohl, '*Œnothera Lamarckiana*.'—J. Dörfler, *Asplenium Baumgartneri* (1 pl.).—E. von Halácsy, 'Zur Flora von Griechenland' (cont.).—F. Kränzlin, 'Orchidaceæ Papuanæ.'—O. Kuntze, 'Bemerkungen zum künftigen botanischen Nomenclator-Congress.'—J. Freyn, 'Plantæ Karoanæ Dahuricæ' (cont.).

BOOK-NOTES, NEWS, &c.

It has been resolved to commemorate Mr. Carruthers's successful presidency of the Linnean Society by presenting his portrait to the Fellows, to be hung in the Society's apartments. The subscription is not to exceed one guinea, and if there should be a surplus, subscribers will receive a photogravure reproduction. Mr. George Murray, British Museum (Natural History), Cromwell Road, London, S.W., will receive and acknowledge subscriptions on behalf of the Committee.

We regret that Mr. H. C. Hart has been prevented by illness from completing the biography of the late Mr. A. G. More which he is writing for this Journal. A portrait will accompany the notice.

The long absence of a Guide-book to Kew Gardens again formed the subject of a question in the House of Commons on March 30th. Mr. Herbert Gladstone in reply held out no hopes of its speedy issue, inasmuch as each department must be worked up in detail, before the new edition of the Guide can be published. The Guide to Museum No. 2 was ready, and would be published as soon as the index was finished; so we may assume that it will shortly be issued, if it has not already appeared.

We hear with much satisfaction that the continuations of both the *Flora Capensis* and the *Flora of Tropical Africa* have so far advanced that portions of each have been sent to press. Botanists will look with interest for the elaboration of *Landolphia* and allied genera, which has been undertaken by the Director of Kew Gardens, and will embody the results of his investigations during the last fifteen or sixteen years.

Dr. Trimen has just arrived in England on leave: he will stay until Christmas, and is now putting the final touches to his *Flora of Ceylon*. Dr. Prain is leaving for Calcutta, and Mr. Ridley starts for Singapore early in June.

The *Index Kewensis* is now completed, and Mr. Jackson is revising the appendix. The fourth and final volume will probably be issued in July.

MR. SCOTT ELLIOT'S TROPICAL AFRICAN ORCHIDS.

By A. B. Rendle, M.A., F.L.S.

(Continued from p. 173.)

Lissochilus mediocris, sp. nov. Bracteis caulinis arcte vaginantibus acutis quam internodi multo brevioribus, racemi laxiflori subulatis pedicellos cum ovariis æquantibus; floribus mediocribus, sepalis 7-nerviis, dorsali ligulato-cuneato valde apiculato, lateralibus minus cuneatis; petalis oblongis basin prope angustatis obtusis, labelli magni pandurati auriculis rotundatis, lobo medio patente orbiculari cristis geminis super basin saccatam instructo; anthera rotundata valde apiculata.

Hab. Samia Kavirondo, 4000 ft. Eastern side of Victoria Nyanza, Jan. (dry interval between rains), 1894, No. 7128.

The flowering-stems are 2½ ft. or more in length; the membranous sheathing bracts have united edges below, with an abruptly acute apex; the lower ones are 3–2 in. long; flowering bracts 7–5 lines long. The sepals are about 11 lines long, 3½ broad; the petals 10 by 4½–5 lines. The wings of the large lip are 3½ lines broad; the central lobe is 9–10 lines long by 8–9 broad; the two large rounded entire crests at its base are 1 line apart, with a slight median ridge; on the disc they rapidly pass into slightly raised quickly diminishing spreading veins; the saccate base is scarcely spurred. The rather thick column is 4 lines long by 1¾ broad. The subglobose pollinia are fixed by a short band to the long bowed filiform gland.

This and the three following species belong to the *L. purpuratus* group of Reichenbach fil. in *Otia Bot. Hamb.* 114. *L. mediocris* approaches the Zambesi plant *L. Livingstonianus* and (e descript.) the Angolan *L. Malangensis*. It differs, however, in the abrupt character of the lip-crests, and the very slight indication of keels. The flowers are also much larger than in the Zambesi species (no measurements are given for *L. Malangensis*).

Lissochilus affinis, sp. nov. Bracteis caulinis vaginantibus sæpe obtusis, racemi pauciflori subulatis quam pedicelli cum ovariis dimidio brevioribus; floribus mediocribus, sepalis 7-nerviis suboblongis apiculatis, petalis æquilongis ovati-ovalibus, labelli pandurati auriculis rotundatis, lobo medio late oblongo basi cum cristis geminis, mediana minus elevata interjecta, antice in venis elevatis flexuosis solutis; anthera obtuse apiculata.

Hab. Urundi, Lake Tanganyika, 4–5000 ft., No. 8173, Sept. (end of dry season), 1894.

The slender flowering-stem is 1½–2 ft. long; the few sheathing bracts are rather short (2 in. or less), and have their edges united for two-thirds their length. The subulate floral bracts only reach ½ in.; the stalk, with ovary, 1 in. The sepals are 9 lines long; the dorsal, oblong above, tapering below, is 3 lines broad, the narrowly oblong lateral ones 3⅓ lines. The lip is 10 lines long, and 8 lines across the auricled base; the auricles are about 4½ lines long: the central lobe is 8 lines from the back of the crests to the rounded apex, and 7 lines broad. The entrance to the spurred basal sac is guarded by two prominent rounded crests, between which is a less prominent ridge; these protuberances rapidly pass on the disc into diverging flexuose swollen veins. The blunt spur is 2 lines long, and terminates a sac of about the same length. The column is 4½ lines long by 1⅓ broad; the pollinia resemble those of *L. mediocris.*

Closely allied to *L. mediocris*, but distinguished by its more oblong sepals, petals broader below than above, oblong (not orbicular) median lip-lobe with swollen elevated veins, and distinct spur.

Lissochilus cornigerus, sp. nov. Bracteis caulinis tubulosis sub apice acuto liberis, racemi triangulari-setaceis caducis, pedicellos (cum ovariis) longos haud æquantibus; floribus mediocribus, sepalis 5-nerviis apiculatis, dorsali cuneato-ligulato acuto, lateralibus ligulatis; petalis oblanceolatis obtusis, labelli pandurati auriculis rotundatis ascendentibus, lobo medio crispulo, carinis geminis super calcaris cornuti orificium incrassatis, mediana tenuiore interjecta.

Hab. Dry grassy plains, 4–5000 ft., Kahimbe, eastern side of Albert Edward Nyanza, Aug. 1894, No. 8031.

The slender flowering-stem is 2 ft. long, including the 8-flowered raceme (about 5 in.). The stem-bracts are much shorter than the internodes, the lowermost being 2¾ in. long. The long-pointed floral bracts reach ¾ in.; the slender pedicels, with ovary, an inch. The sepals are 10 lines long, the dorsal 2¼, the lateral 2½ lines broad. The petals are 9 lines long by 4 broad. The blunt lip is 9 lines by 6, the basal auricles 3 lines broad; the horn-like recurved spur is 4 lines long. The column is nearly 4 lines long and 1 broad.

Near the last species, but differs in its smaller flowers, especially the lip, and marked horn-like spur.

Var. MINOR. Planta minor, floribus minoribus cum colore saturiori.

Hab. Buddu (Uganda, W. of Victoria Nyanza), Feb. to Mar. 1894, No. 7486.

The slender flowering-stem is about 21 in. long. The 5-nerved sepals are 9 lines long, the dorsal 2 lines broad, the lateral 2⅓. Petals 8 by 3 lines; lip 8 by 6. Spur 3 lines long.

Also differs from the type in its evidently much deeper-coloured flowers, which moreover appear six months earlier in the year, though the two localities are only about 100 miles apart. August, Mr. Scott Elliot tells me, is about the height of the dry season, and February to March about the beginning of the rains.

Lissochilus gracilior, sp. nov. Planta minor gracilis, floribus minoribus longe pedicellatis, bracteas triangulo-setaceas triplo superantibus; sepalis ligulatis 3–5-nerviis obtusiusculis vel apiculatis, petalis oblongis, labelli pandurati alis rotundatis, lobo medio late oblongo obtuso, basi super calcar conicum carinis ternis, lateralibus marginem versus ramosis, instructo; columna haud crassa, anthera obtuse apiculata.

Hab. Urundi, Tanganyika, 4–5000 ft., Sept. (end of dry season), 1894, No. 8173 pars.

A pretty little plant; the thin flowering-stem about 15 in. high, bearing at the lower nodes short membranous tubular bracts with an abruptly acute free upper part. The raceme is about 3 in. long, of 6–7 spreading flowers; bracts about $\frac{1}{3}$ in.; the slender stalks, with ovary, nearly 1 in. The lateral sepals are $5\frac{1}{2}$ lines long by $2\frac{1}{3}$ broad; the dorsal is the same length, but slightly narrower (2 lines); the obtuse petals are 5 by $3\frac{1}{3}$ lines. The lip is 7 lines long, and 5 lines across at the base; the central lobe has a crisped margin, and is nearly 5 lines long by $4\frac{1}{2}$ broad. Of the 3 main keels, the median runs straight down the middle of the convex disc; the two lateral send smaller diverging branches towards the sides. The conical spur is 2 lines long. The column is $3\frac{1}{2}$ lines. Colour unknown.

A specimen from the Shire Highlands (Mandala, Dec. (lesser rains), 1894, No. 8499) must be included in this species. It is a smaller plant, with the thin flowering-stem only 10–15 in. long. The 5-nerved sepals are longer and proportionately narrower than in the Urundi specimen (the dorsal 6 by $1\frac{2}{3}$ lines, the lateral 6 by scarcely 2); the petals are very slightly larger.

A member of the *L. purpuratus* section near *L. Livingstonianus* Reichb. f. (Zambesi), but a smaller plant, with bracts only one-third the length of the flower-stalks (not subequal); the lip moreover has a very rounded (not acute) tip.

Var. ANGUSTA. Perianthii segmentis angustioribus, sepalis 3-nerviis valde apiculatis, petalis sæpius ovali-oblongis.

Hab. Dry grassy hills, east side of Albert Edward Nyanza, Aug. (height of dry season), 1894, No. 8075. Karagwe, W. of Victoria Nyanza, 4–5000 ft., Sept. (first showers of rainy season), 1894, No. 8209.

The two gatherings on which the variety is founded are within 100 miles of each other, and considerably further north than those of the type. The sepals (very rarely 5-nerved) are 5–6 lines long and $1\frac{1}{2}$ broad; the petals show a tendency towards an oval shape, and measure 5 lines by $2\frac{1}{2}$; the lip is also slightly narrower (6 lines by 5).

Lissochilus brevisepalus, sp. nov. Planta bipedalis, bracteis caulinis brevibus, florentibus ovatis vel lanceolatis acutis quam ovaria pedicellata multo brevioribus; floribus inter minores, sepalis 5-nerviis oblongo-ligulatis acutiusculis, petalis orbicularibus, labello basi saccato, alis erectis oblongis, lobo medio orbiculari emarginato, disco cristis 3 crassis instructo; columna brevi crassa; polliniis subglobosis.

Hab. Shire Highlands, Dec. (lesser rains), 1894, Sotchi, No. 8526, and Ndurani, No. 8511.

The leafless flowering-stem is about 26 in. long, sheathed at the base by tubular truncate bracts less than an inch long, and bearing similar ones with a subacute tip at the lower nodes. The raceme is about 6 in. long, and bears about a dozen flowers. The floral bracts are 3–4 lines, the ovary and stalk about 1 in. The sepals are 3½–4 lines long by 1⅔ to scarcely 2 broad, the petals 6–7 lines each way. The lip-wings are 2⅓ lines long by 2 broad, the central lobe 5 by 4½ lines. The three large swollen rounded crests occupy the upper surface to within 1 line from the apex; a pair of thickened veins also run forwards on each side from the base of the disc. The column is 2 lines long. The pollinia are attached by a short narrow band to the broad rostellar disc.

Is very near the Abyssinian *L. graniticus* Rchb. f., but is a much smaller plant, and differs also in its round very blunt petals, longer wings to the lip, and very large swollen crests.

Lissochilus pulchellus, sp. nov. Parva, racemo elongato e bracteis vaginantibus orto; bracteis florentibus anguste triangulo-setaceis quam ovaria pedicellata dimidio brevioribus; floribus inter minores, sepalo dorsali ligulato-oblanceolato abrupte apiculato 3-nervio, lateralibus ligulatis; petalis ovatis obtusis apiculatis, labello alis brevibus truncatis, lobo medio orbiculari emarginato, disco cristis septenis instructo, sacco magno a calcare conico brevi terminato; columna brevi clavata.

Hab. Dry places, after burning; Kibwera, Urigi, Karagwe country, 4–5000 ft., Sept. (first showers of rainy season), 1894, No. 8126.

A small plant, 8–9 in. long, the naked stem bearing flowers to within 3 in. of the base, the lower internodes being short and hidden by the closely sheathing bracts; the latter are about 1 in. long, with their edges free in the upper half, and an acute apex. The flowering-bracts are about ½ in. long; the slender pedicel and ovary ¾ in. before fertilization, after which the flower becomes bent vertically downwards as the ovary swells. The sepals are 4 lines long by 1⅓ broad, the petals 4½ by 3½. The short broad wings of the labellum form the sides of a large sac, ending in a spur of about 1 line; the central lobe is 3 lines by 3¼; its disc is crowned by 7 blunt diverging crests, which are continued as slender keels down the anterior margin of the sac. The column is nearly 2 lines long.

Is near *Lissochilus microceras* Rchb. f., but has larger flowers, with ovate not oblong petals, and a roundish not obovate median lobe to the lip.

Mr. Elliot tells me that this plant illustrates a characteristic of the vegetation of parts of Tropical Africa and Nyasa-land. Having some store of nourishment beneath the ground, it is able to spring up with the first showers which usher in the rainy season. The flowers are thus exposed before the grasses get a start, and during the short dry interval before the rains begin in good earnest are very conspicuous. After flowering, the leaves shoot up along with the grasses in the wet season which has then set in.

Lissochilus parvulus, sp. nov. Parva, caule tenui fere ad basin vaginatam florifera; bracteis triangulo-setaceis quam pedicelli tenues dimidio minoribus; floribus parvulis, sepalo dorsali ligulato acuto, lateralibus anguste oblongis obtusiusculis; petalis ovatis obtusis, labello infra medium 3-lobo, lobis lateralibus brevibus rotundatis, lobo medio oblongo obtuso, disco carinis quinis instructo; calcare brevi conico prorsum verso; columna brevi crassa.

Hab. Open dry bare laterite, Samia, Kavirondo, Victoria Nyanza, Jan. (dry interval between rains), 1894, No. 7081.

The slender stem, 14–17 in. long, is laxly flowered down to about 3 in. above the base; the lower internodes are sheathed as in *L. pulchellus*. The lower flowering-bracts are ½ in. long, less above. The small flowers are only 4½ lines in diameter. The dorsal sepal is 3-nerved, 2 lines long by ⅔ line broad; the lateral ones are 4-nerved, and 2¼ lines long by ⅚ line broad; the petals 2⅓ by 1½ lines. The rather narrow central lobe of the lip is 1¾ lines by 1⅓; the spur and the column are each ⅔ line long.

Very near the Central African species *L. pyrophilus* Rchb. f., but distinguished by its smaller flowers, more oblong sepals, distinctly ovate petals, and the smaller and narrower central lobe of the lip. The colour of the flowers is also different.

Lissochilus validus, sp. nov. Caule rufescente crassa, bracteis obtusis brevibus, racemi elongati membranaceis oblongis ovaria pedicellata haud æquantibus; floribus inter majores flavis, sepalis concavis, dorsali cuneato-ligulato, lateralibus ligulatis basi angustatis; petalis oblongis, labello subpandurato basi late saccato ecalcarato, lobo terminali late oblongo crispato venis prominulis divergentibus instructo, carinis ternis super sacci orificium gibbosis et sub lobo terminali lamelliformiter cristatis; anthera bicorniculata.

Hab. By marsh, Urundi, head of Lake Tanganyika, Sept. (end of dry season), 1894, No. 8347.

The thick stalk (the base of which is absent), with the raceme (1 ft.), is 3 ft. long. The blunt membranous bracts are 1½ in. long or less; the two uppermost have a free margin; the next below has the margin united for half its length. A slender few-flowered branch springs from the base of the raceme. The blunt floral bracts reach ¾ in. in length; the stalks, with ovary, 1 in. The sepals are 10 lines long, the dorsal 3 lines, the lateral 3½ lines broad. The petals are 10 by 4½ lines. The lip is 1 in. long, and 7 lines broad at the base; the rounded end lobe is 4 lines long and as broad; the 3 median keels are raised into swollen rounded crests above the entrance to the sac, and end in lamelliform crests with a crispulate margin at the base of the central lobe. The column is ¼ in. long by 2 lines broad.

Near *L. angolensis* Reichb. f., but differs in its narrower ligulate sepals and oblong petals.

Var. MINOR. Bracteis lanceolatis, floribus quam in typo minoribus, colore pallidioribus, petalis anguste oblongis.

Hab. Jumotu Swamp, Kampala, Uganda, Feb. (between the rains), 1894, No. 7305.

The upper part of the flowering-stalk only is present.

Is distinguished from the type by its pointed lanceolate bracts and smaller flowers, the sepals being scarcely 10 lines long by scarcely 3 broad, the petals 9 by 4 lines; the lip ¾ in. long, with a broad mucronulate tip to the terminal lobe, which is 3½ lines long by 3 broad. The column is 5 lines long by 1⅔ broad.

Polystachya minima, sp. nov. Vix tripollicaris, foliis ternis basi vaginantibus linearibus apice bifidis racemum 4-florum ferrugine pubescentem parvo superantibus; bracteis triangulo-setaceis ovaria pedicellata haud æquantibus; floribus parvis, sepalo dorsali lanceolato acuto, lateralibus triangulis acuminatis basi inæqualibus et in mentum breve productis; petalis linearibus acutis uninerviis, labello unguiculato antice trilobo, lobis lateralibus rotundatis, lobo medio reflexo crispulo triangulari acuto.

Hab. On trees, Sotchi, Shire Highlands, Dec. (lesser rains), 1894, No. 8519.

The basal sheaths are almost colourless, striate, and blunt, reaching ¾ in. in length. The leaves (to 2 in. in length by 2 lines in breadth) become narrowed at the base and apex. The peduncle bears a colourless scarious lanceolate-acuminate bract in its lower half; the upper flower-bearing portion is zigzagged; the reddish pubescence is continued up the pedicels on to the outside of the sepals. The scarious bracts are scarcely 1½ lines long, the ovary and stalk 2 lines. The sepals are 3 lines long, the dorsal is scarcely 1 line broad, the lateral 1½ at the base. The petals are 2½ lines long by less than ½ line. The upper part of the lip, above the claw, is 2⅓ lines long by 2 lines at the base; the central lobe is just over 1 line. The column is 1 line long.

Near *P. Kilimanjari* Rchb. f., but easily distinguished by the narrower sepals and very narrow linear petals.

Polystachya Elliotii, sp. nov. Ramosa diffusa, caulibus florentibus diphyllis, infra folia bracteis longis scariosis omnino obtectis; foliis ligulatis vel lineari-lanceolatis racemum puberulum pauciflorum excedentibus; bracteis triangulo-setaceis pedicellos cum ovariis haud æquantibus; sepalo dorsali ovato acuto concavo, lateralibus in galeam cylindricam parti liberæ æquilongam coalitis, antice late oblongis subfalcatis acutis; petalis spathulatis, labello longe unguiculato subito spathulato et 3-lobo, callo crasso sub lobo medio instructo, facie velut columnæ brevis pede setuloso, lobis lateralibus oblongis, lobo medio suborbiculari.

Hab. On tree-trunks, Ruwenzori, 8000 ft., May (greater rains), 1894, No. 7796.

Persistent main axis a straggling undulating sympodium, bearing the remains of successive terminal shoots; that of the present season 4–5 in. high, clothed in the lower half with scarious colourless bluntish sheaths, from which spring the leaves 2½–4 in. long, 2½–3 lines broad. Rachis shortly pubescent; bracts 1½ lines long; pedicels 2–2½ lines. Flowers 4½ lines long; dorsal sepal 2 lines long, half as broad; lateral 4½ lines, the free part 2 lines by 1½ broad; petals 2 lines by ½ line at the broadest. Lip 4⅓ lines long, including the claw (2⅓ lines); 2 lines broad in the upper part. The median lobe is obscurely apiculate, and bears 3 thickened veins radiating from the base towards the margin; there is a conspicuous fleshy wart below its juncture with the rounded lateral lobes. The stout column is scarcely 1 line long. The anther has a blunt anterior peak.

This species must be very near *P. spatella* Kränz., described in *Engl. Bot. Jahrb.* xix. 251, collected by Stuhlmann on the same mountain. A comparison of Mr. Elliot's plant with Kränzlin's description reveals several differences. The petals of *P. spatella* are said to be narrowly linear and acute; those of *P. Elliotii* are spathulate and obtuse; again, no mention is made of any callus below the median lobe of the lip, a characteristic feature in our plant, which has moreover narrower leaves overtopping the raceme. The fact that a second species, closely allied, but evidently distinct, has been found by Mr. Elliot on Ruwenzori was a further inducement to their description as new. They are evidently members of a group of closely allied species.

Polystachya ruwenzoriensis, sp. nov. Præcedenti similis sed minor et minus diffusa, floribus autem vix majoribus, sepalo dorsali ovato concavo subacuto, lateralibus galeatis, parte libera oblonga acuta; petalis lineari-spathulatis, labelli longe unguiculati sparse setulosi parte superiore 3-loba crispata basi involuta, callo auriculiformi sub utroque sinu instructa.

Hab. In heather, Butagu, Ruwenzori, about 9000 ft., July (rains), 1894, No. 8617.

Flowering-shoots 2–3 in. long, the blunt linear-lanceolate leaves not exceeding 1¾ in. in length by 2 lines in breadth. Triangular setaceous bracts 1½ lines long, a little shorter than the flower-pedicel. Dorsal sepal 2⅓ lines long by 1⅓ broad, lateral ones a little over 5 lines, the free portion 3 lines by 1½. Petals 2⅓ by less than ½ line. Lip 5 lines long, the linear claw 2½; the limb is curled on each side at the juncture with the claw, and bears on the disc below each incision a broad auricular projection with an irregularly crenulate margin. The short lateral lobes are oblong, the central orbicular and apiculate. The stout column is 1 line long. The rounded anther is beaked. The fertilized ovary (⅓ in. long) is sharply triangular.

Distinguished from *P. Elliotii* by its larger sepals, narrower petals, and lip-characters, besides being a smaller plant.

Polystachya simplex, sp. nov. Semipedalis, internodiis inferioribus vaginatis incrassatis vix pseudo-bulbosis, 3–4 superioribus foliosis; foliis anguste oblanceolatis racemum brevem valde superantibus; bracteis triangulo-setaceis, ovaria cum pedicellis haud æquantibus; floribus parvis, sepalo dorsali ovato acuto, lateralibus ovato-triangularibus acutis mentum formantibus; petalis lineari-oblanceolatis acutis, labello e basi triangulari 3-lobo, lobis lateralibus subrotundatis antice truncatis, lobo medio late ovato vel semiorbiculari, disco ruguloso, margine crispulato, apice valde apiculato; columna brevi, crassa.

Hab. On rocks at foot of waterfall, 6200 ft., Wimi, Ruwenzori, June (rains), 1894, No. 7827.

A small plant 6–7 in. high, the lower internodes covered by the almost colourless scarious obtuse sheaths, the upper bearing subobtuse leaves with a blade, plicate at the base, 4 in. or less in length, and 6–8 lines wide. The slender puberulous peduncle only reaches $2\frac{1}{4}$ in.; the longer of the two is about 12-flowered; the membranous setaceous bracts are 3–2 lines long; the stalk, with ovary, slightly longer. The sepals are $2\frac{1}{2}$ lines long, the very acute dorsal one $1\frac{1}{5}$ lines broad, the two lateral $1\frac{1}{2}$ lines at the base; the petals are 2 lines by $\frac{1}{2}$ line. The lip is $2\frac{1}{2}$ lines long, including the apiculus, by $2\frac{1}{4}$ broad; the column $\frac{1}{2}$ line long by $\frac{3}{4}$ line broad. The anther-cap is small and rounded; the pollinia roundish, and attached by a short band to the gland.

Polystachya nigrescens, sp. nov. Planta sicca nigrescens, caule tenui elongato a foliorum vaginis obtecta, foliis ligulatis vel oblongo-ligulatis apice obtuso integris; racemo terminali, bracteis triangulari-subulatis; sepalo dorsali a basi truncata ovato apice abrupte acuto marginibus incurvis, lateralibus inæqualiter triangulis valde apiculatis antice in galeam brevem productis; petalis e basi angusta spathulatis apiculatis, labello breviter unguiculato oblato antice triangulari et piloso, disco cum callo linguiformi instructo; columna brevi, ovario 3-alato.

Hab. Ruwenzori. Among tree-ferns, Wimi, 7–8000 ft., June (rains), No. 7897. In heather, Butagu, 9–10,000 ft., July (rains), No. 7958.

Erect plants 9–12 in. high, turning black on drying. Leaf-blades 3–4 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad. The peduncle bears an elongated acuminate bract with an amplexicaul base below the short terminal raceme, which is $2\frac{1}{2}$ in. or less in length. The bracts ($\frac{1}{4}$ in. long) exceed the short pedicels, which, as all the flowers present have been fertilized, is easily distinguished from the ovary. The dorsal sepal is 3 lines long by $1\frac{1}{2}$ broad, the lateral 4 by $3\frac{1}{2}$ lines; the petals are $2\frac{2}{3}$ lines by $\frac{2}{3}$ line in the broad upper part. The lip is 4 lines long, including the claw (1 line), and 3 lines at its broadest; it is drawn out into a blunt triangular tip, which is pilose on the upper surface, the hairs being sparsely continued back to the tongue-like callus. The short column is $\frac{2}{3}$ line long. Fruit narrowly clavately oblong, nodding, 1 in. long.

Is near the Madagascar species *P. rosea* Ridl., but has larger flowers and a more leafy stem with only one sheathing bract below the inflorescence.

(To be continued.)

THE SUMMER FLORA OF BIGBURY BAY, S. DEVON.

By the Rev. E. S. Marshall, M.A., F.L.S.

I spent four weeks of June and July, 1894, at the little village which gives its name to the beautiful bay stretching from Bolt Head to Revelstoke, and explored almost the whole of the coast-line between these points. Comparatively little attention was paid to the inland parts of the neighbourhood, which are too highly cultivated to please a botanist; but the lower Erme and Avon valleys were fairly well examined, and my rambles extended as far north as Ivybridge. The soil is almost entirely schistose. Owing to the generally dry nature of the country, marsh and moorland plants are few and far between in the "South Hams," as the tract lying between Dartmoor and the sea is locally termed. The late Mr. Briggs's *Flora of Plymouth* takes in the western part of the district dealt with, as far as Ringmore, the parish lying immediately to the westward of Bigbury. I was able to confirm by actual experience the impression of extreme accuracy and thoroughness which a study of his book produces; very little seems to have escaped the author's notice, even in this, the most inaccessible part of the area with which he dealt.

Upon the whole, the vegetation, though luxuriant, is somewhat poor in number of species, and forms of critical interest are not numerous. An exception must, however, be made in the case of *Rubi*, the Erme valley in particular being very rich in them. The season was not a forward one, and it was only in the last ten days of my visit that they were in proper condition for study. Several distinct-looking plants were obtained, for which I have hitherto failed to get a definite name, though Dr. Focke and Rev. Moyle Rogers have very kindly examined the whole of my gatherings. To them and to Prof. Crépin, who has seen a selection of the more interesting roses, my best thanks are due, as well as to Messrs. Arthur Bennett and F. J. Hanbury. Plants which (to the best of my belief) are new to vice-county 3 (S. Devon) are marked with an asterisk.

Ranunculus repens L. A remarkably small and neat form, which grows on the cliffs near Challabrough, below Ringmore, is thought by Mr. Bennett to be the var. γ. *pusillus* Petermann; it appears, however, to be a dry-soil state, rather than a variety.

Papaver hybridum L. Abundant in a wheat-field near Folly Farm, Bigbury.

Fumaria pallidiflora Jordan. I only saw this near Salcombe, which is one of its first recorded British stations. I have also observed it at Dartmouth. — **F. Boræi* Jordan. Very frequent, especially near the coast. This most beautiful plant (which I am glad to see restored to specific rank in the new edition of the *London Catalogue*) appears to be a native rather than a colonist, as it occurs on banks, in hedges, and at the foot of walls, and not, as a rule, among the crops. I searched carefully, but in vain, for the true *F. confusa*, and am convinced that Mr. Briggs was wrong in so naming the common plant of his neighbourhood. Good *F. Boræi*, gathered by Rev. R. P. Murray and myself at Dawlish, was unhesitatingly called by him "*confusa*," and he mentions (*l. c.* 17) that "some great authorities on British plants have been disposed to name otherwise certain dried specimens." In my experience, the true *F. confusa* has a great superficial resemblance to the rampant form of *F. officinalis*. — *F. muralis* Sonder. Hedge-bank near Kingston; only one fine plant seen. New to the district of *Fl. Plymouth*.

Brassica Sinapioides Roth (*B. nigra* Koch). Extraordinarily abundant about Ringmore; truly wild.

Polygala serpyllacea Weihe. A small and compact form, with flowers of a very bright blue (recalling *P. calcarea*), and sepals much narrower and shorter than the capsule, was found on the edge of the cliffs above Armour Cove, Ringmore, a very curious habitat for this heath-land species.

Silene noctiflora L. Cornfields near the coast, Bigbury; locally rather plentiful.—*S. dichotoma* Ehrh. A few specimens in a clover-field near Bigbury; introduced with the crop.

Stellaria media Cyr., var. *major* Koch (*S. neglecta* Weihe). In a hedge at Orcherton, near Kingston; not seen elsewhere.

Arenaria serpyllifolia L., var. *glutinosa* Koch. Sands at the mouth of the Avon, opposite Bantham; scarce. I could not find var. *Lloydii* (Jordan).

Sagina maritima Don, var. *debilis* (Jordan). By the tidal Avon, below Aveton Giffard.—*S. apetala* L., var. *prostrata* Bab. Frequent on the coast; a very dense and compact form occurs on the cliffs near Folly Farm.

Buda rupestris F. J. Hanbury, var. *glabrescens* F. J. Hanbury. I examined the Kingston station for this "variety" most carefully, but without success, and suspect that it is only a *state* of extra dry seasons; not one instance of deviation from type could be found there during the wet summer of last year. The locality is very restricted, so that I could hardly have overlooked the plant, had it occurred.

Hypericum perforatum L., var. *angustifolia* Gaud. Lane between Churchstow and Malborough; well marked. The beautiful form (or variety) *H. lineolatum* Jordan is plentiful beside the Avon, near Hatch Bridge.—*H. undulatum* Schousb. In a shady lane between Kingston and Modbury.

Erodium moschatum L'Héritier. Very uncommon; only seen at Bigbury village.

Melilotus arvensis Wallr. and *M. alba* Desr. Clover-fields about Bigbury; the former is frequent.

Lotus hispidus Desf. Locally plentiful all along the coast. *L. angustissimus* was sought for unsuccessfully.

Vicia lutea L. Cliffs near Bigbury; very rare. Only one station (Cornish) is given for this in *Fl. Plymouth.*

Prunus spinosa L., var. *macrocarpa* Wallr. Rocky banks of the Avon, between Bigbury and Aveton Giffard; assented to by Dr. Focke as true *P. fruticans* Weihe. With it was associated a form of the type having the leaves remarkably pubescent beneath. — *P. Cerasus* L. In hedges near Bigbury; it did not look much like an "introduction."

Rubus suberectus Anders. Here and there in woods near Kingston. — *R. nitidus* Wh. & N, By the Avon, a little below Hatch Bridge. — *R. holerythros* Focke. I am pretty sure that I saw this common plant of my own neighbourhood about Kingston, but unfortunately no specimens were preserved.—*R. imbricatus* Hort. By the Avon, close to the above-mentioned station for *R. nitidus.*—

R. Lindleianus Lees. Common near Bigbury. — *R. erythrinus* Genev. Between Ermington and Flete.—*R. rhamnifolius* Wh. & N. Not unfrequent; a hybrid of this with some other species occurred at Pamflete, above the Erme, opposite Kingston; Mr. Rogers suggests *R. pyramidalis* Kalt. as perhaps the second parent. — *R. pulcherrimus* Neum. Ermington, by the river. — **R. Questierii* Lefv. & Muell. Pamflete; a very handsome plant, with almost golden-yellow foliage. — *R. micans* Gren. & Godr. Perhaps the most abundant species of the district. A very large and beautiful bramble, placed here by Dr. Focke, is much more probably the offspring of a union with *R. thyrsiger* Bab. — *R. leucostachys* × *rusticanus*. Pamflete. — *R. Boræanus* Genev. Common in the valley of the Erme. A hybrid with *leucostachys* was met with at Pamflete.—*R. Leyanus* Rogers. Between Ivybridge and Ermington. —*R. oigoclados* Muell. & Lefv. Ivybridge; Pamflete. Probably not uncommon.—*R. thyrsiger* Bab. Plentiful about Kingston, on both sides of the Erme. When growing, this is one of the most marked and showy brambles that I have yet seen; its tall habit, pruinose stems, and large flowers at once catch the eye. Mr. Rogers remarks that my specimens represent a white-felted form, with coarser leaf-cutting and less hairy stems than usual. — **R. serpens* Weihe, var. *rivularis* (Muell. & Wirtg.). A pretty little trailing plant, abundant in the extensive wood adjoining Ivybridge Station. — *R. dumetorum* Wh. & N. By the Avon, between Hatch Bridge and Aveton Giffard; both as a. *ferox* Weihe and as a different form, somewhat intermediate between vars. *diversifolius* and *tuberculatus*.

Potentilla procumbens × *reptans*. Bank near the Rectory, Bigbury; I also noticed it in the woods near Kingston. — **P. reptans* × *silvestris*. Road-side, about half a mile from Ivybridge towards Ermington; extending over about twenty yards of the hedge-bank. Fairly intermediate between the parents, which grow together at the spot in plenty.

Rosa micrantha Smith. The form frequent in this neighbourhood is so different-looking from the plant of Kent and Surrey that I did not at first recognize it. Prof. Crépin calls it "var.," but gives no special name. Mr. Rogers thinks that the modifications may be due to the mild and rainy climate of S. Devon.— *R. obtusifolia* Desv. Only seen once, near Kingston. — *R. canina* L., var. *aspernata* (Déséglise). Near Buckland; vars. *lutetiana*, *dumalis*, and *urbica* are all common. — *R. stylosa* Desv., var. *systyla* (Bast.). Rather frequent. — Var. *leucochroa* (Desv.). Remarkably common, characteristic, and constant; it is perhaps better classed as a separate species than as a variety. — Var. *pseudo-rusticana* Crépin (*fide* Crépin). Hedges near Ringmore; a marked plant, which I rather suspect may be *arvensis* × *leucochroa*.

Pyrus rotundifolia Bechst. (*latifolia* Syme). Rocky bank of the Avon, near "The Stakes," above Bigbury.

Epilobium lanceolatum × *montanum*. Quarry at Thurlstone, with *E. montanum* × *obscurum*. — *E. obscurum* × *parviflorum*. Pamflete, and in a quarry at Salcombe. —*E*. *adnatum* was only seen at Pamflete, and *E. Lamyi* F. Schultz not at all.

Sium erectum Huds. Marsh near the sea, below Thurlstone. Queried for S. Devon in *Top. Bot.*

Œnanthe Lachenalii Gmel. Marshy meadows near Saltercress, above Kingston; not recorded for this district in *Fl. Plymouth.*

Galium Mollugo L. Very variable; the forms of this district deserve special attention, but the material collected by me is too immature to be of much service.—*G. Mollugo* × *verum.* Abundant and very variable on the sands near Bigbury, Bantham, and Thurlstone. Near Bantham there occurs in profusion a small, prostrate form, closely approaching the maritime form of *verum* (? var. *maritimum* DC.), with which it grows. One of the Thurlstone forms, though approaching *Mollugo* in habit, darkens almost as much as *verum* in drying. — *G. palustre* L., var. *Witheringii* (Sm.). Marsh near the sea, below Thurlstone.

Valerianella olitoria Poll., var. **lasiocarpa* Reich. Very common near Bigbury, to the apparent exclusion of the type; some of the specimens were 18 in. long.—*V. rimosa* Bast. Field near Bigbury. —*V. dentata* Poll. is remarkably common.

Senecio vulgaris L., var. *radiatus* Koch. Very sparingly, on low cliffs near Bigbury; probably the same as the Whitsand Bay plant referred to on pp. 204–5 of *Fl. Plymouth.*

Crepis taraxacifolia Thuill. and *C. biennis* L. Fields of grass and clover, near Bigbury; introduced with the crop.

Hieracium umbellatum L., var. *monticola* (Jordan). Plentiful in lanes about Kingston and Bigbury. — *H. boreale* Fries. In woods on both sides of the Erme, near Kingston; so much "off type" that I scarcely knew what to call it. The species is only recorded from one Devon station in *Fl. Plymouth*, and that with some doubt. Mr. Hanbury writes of my specimens, which were grown on for some weeks in the garden:—"These are a form of *H. boreale* Fr., just the same weak yellow-styled forms as I have from Wales and confirmed by Elfstrand. *One* specimen has the usual hairy stem, though the others are as glabrous as my var. *calvatum;* but your plants are not that var."

Jasione montana L., var. *major* Koch. Cliffs near the mouth of the Avon, Bigbury; very luxuriant and handsome.

Specularia hybrida DC. Cornfield near Folly Farm, Bigbury, with *Papaver hybridum.*

Statice auriculæfolia Vahl, var. *intermedia* Syme. Rocks at Sewer Mill Cove, near Malborough; not seen anywhere else. Remarkably variable in size and habit.

Anagallis arvensis L., var. *carnea* (Schrank). Plentiful in the station for *Specularia* just mentioned.

Erythræa Centaurium Pers., var. *capitata* Koch. Frequent on the cliffs of Bigbury Bay, wherever suitable localities are to be found. — **E. capitata* Willd., var. *sphærocephala* Towns. In some plenty on the downs near Sewer Mill Cove, and at intervals for about a mile westwards, in the direction of Bolt Tail; also near Thurlstone, but very scarce. I sought for it in vain to the west of the Avon. These stations extend the known westward range of an interesting and distinct species.

Verbascum virgatum Stokes. Clearly native, I think. In one or two remote parts of Bigbury parish, and abundantly near Buckland, towards Bantham; here it grows mixed up with *V. Thapsus*, but I could find no hybrid between them.

Scrophularia aquatica L. Only as the var. *cinerea* Dumortier. —A handsome form of *S. nodosa* L., with large and few flowers, was gathered near the Erme above Kingston. — *S. Scorodonia* L. grows between Churchstow and Malborough, as well as about Kingsbridge, as Mr. Briggs mentions; I could not find it further west.

Mimulus luteus L. Naturalized at Duke's Mill, Bigbury.

Veronica arvensis L., var. **eximia* Towns. Sandy ground at the top of Bolt Head.

Orobanche Hederæ Duby. Salcombe; on ivy at Bigbury Rectory; cliffs near Bigbury, where one specimen appeared to be parasitical on *Ononis*. — *O. minor* Smith. Treated as a colonist or casual in *Fl. Plymouth;* I think, however, that it is native near Bigbury and Buckland. It also grew plentifully, last summer, in a clover-field near Thurlstone. — *O. amethystea* Thuill. Sparingly on *Daucus Carota*, opposite Burr Island (I did not see *D. gummifer*, except perhaps at Hope, between Thurlstone and Bolt Tail); on *Daucus* and *Eryngium*, at Thurlstone Sands; rather plentifully opposite the Thurlstone Rock, among grass, apparently on either *Lotus corniculatus* or *Trifolium pratense.*

Mentha rotundifolia Hudson. There can, I think, be no reasonable doubt that this is a true native about Kingsbridge, Bigbury, and Kingston; several of its stations are far from houses or gardens. —*M. gentilis* L., var. *Wirtgeniana* (F. Schultz). By the Avon, about half a mile below Hatch Bridge; looking quite wild. Named by Mr. Arthur Bennett.

Galeopsis Tetrahit L., var. *bifida* (Boenn.). Plentiful in cornfields near Malborough, and I believe frequent elsewhere.

Atriplex laciniata L. Sands by the Avon mouth, opposite Bantham; also in plenty on the Mothecombe side of the Erme estuary, opposite Mr. Briggs's station for it.

Polygonum aviculare L., var. *littorale* (Link). Very luxuriant on sands near the Thurlstone Rock; some specimens measured fully four feet across. — *P. Raii* Bab. Sands opposite Bantham. I searched carefully for *P. maritimum*, but without success.

Rumex rupestris Le Gall. Sewer Mill Cove, associated with *R. conglomeratus.* I hardly think that any one who has seen these plants growing would combine them under one species, and feel sure that they are rightly kept apart by Briggs and Babington.— *R. Hydrolapathum* Hudson. Swamp near the sea, below Thurlstone. Only one station, and that Cornish, is given for it in *Fl. Plymouth.*

Euphorbia portlandica L. Remarkably common on cliffs all along this coast.

Ulmus surculosa Stokes, var. *glabra* Miller. Looks like a native, in a wooded combe between Kingston and Ringmore.

Urtica dioica L., var. *angustifolia* A. Blytt. Hedge near Ringmore, very well marked; almost, if not quite, destitute of stinging hairs.

Parietaria officinalis L., var. *fallax* Gren. & Godr. Wall at Aveton Giffard. The type is common.

Quercus Robur L., var. *intermedia* (D. Don). Rocky bank of the Avon, below Aveton Giffard; apparently indigenous.

Orchis pyramidalis L. Rather common near the sea, Bigbury, in schistose sand.

Iris Pseudacorus L. The type grows in marshy ground near the sea, below Bigbury; only var. *acoriformis* was met with elsewhere.

Ruscus aculeatus L. Cliffs near the mouth of the Avon.

Allium vineale L., var. *compactum* (Thuill.). Hedge-bank by Folly Farm, Bigbury.

Luzula Forsteri × *vernalis* (*L. Borreri* Bromf.). Lanes about Bigbury and Kingston, associated with the parent species.

Sparganium ramosum Hudson, var. **microcarpum* Neuman, and *S. neglectum* Beeby. Both grow pretty plentifully in the Avon, between Hatch Bridge and Aveton Giffard.

Alisma ranunculoides L. Swamp near the coast, Thurlstone. Without personal authority in *Top. Bot.*

Potamogeton pusillus L. Ditch between Flete and Ermington.

Ruppia rostellata Koch. In a small pool by "The Stakes," Bigbury; clearly very scarce in this neighbourhood.

Zostera nana Roth. In the Avon, a little above "The Stakes," abundant; *Z. marina* was not met with at all.

Carex divisa Hudson. Sandy ground, opposite the Thurlstone Rock, extending for about twenty yards. Evidently most rare in S. Devon, and entered without personal verification in *Top. Bot.*

Anthoxanthum Puelii Lecoq. & Lamotte. In a clover-field near the mouth of the Avon, Bigbury; bidding fair to become permanently established. In the same field *Agrostis Spica-venti* Beauv. occurred as a casual.

Poa nemoralis L., var. *coarctata* Gaudin. Wall-tops between Modbury and Flete; very characteristic.

Glyceria plicata Fries. Not uncommon. The variety (or hybrid) *G. pedicellata* Towns. was seen once or twice, but the precise localities were not noted.

Festuca ovina L., var. **glauca* (Lam.). Schistose rocks of the Erme and Avon estuaries; also on cliffs of Bigbury Bay, near Kingston. — *F. pratensis* × *Lolium perenne* (*F. loliacea* Hudson). Plentiful in moist meadows near the sea, below Bigbury. Dr. Focke endorsed the naming.

Bromus secalinus L. Road-side between Bigbury and Folly Farm.—*B. commutatus* Schrader is native and not uncommon.

Agropyron acutum auct. angl. Sandy coast opposite Burr Island; scarce.

**Chara aspera* Willd. and *C. vulgaris* L., var. *longibracteata* Kuetz. In a pool near the sea, below Thurlstone. A *Nitella*, probably *N. opaca* Agardh, was plentiful in a ditch on the Ermington side of Flete, but was in too filthy a state to be determined.

AN ACCOUNT OF THE GENUS ARGEMONE.

By D. Prain.

(Continued from p. 178.)

The difficulty occasioned by the union of these dissimilar forms has been got over by the statement that *A. mexicana* is highly variable. This statement is, however, purely hypothetical, and, as applied to the original *A. mexicana* of Tournefort and Linnæus, quite incorrect. This is shown by an examination of the numerous specimens of the plant reported from various parts of the Old World where this form exists as an introduced plant, and where no other form of *Argemone* occurs. In India, for example, where the species extends from the Punjab and Kamaon to Ceylon, and from Malabar to Bengal, growing everywhere from sea-level to an elevation of 5000 ft. in the Himalayas and the Nilghiris, and flourishing equally well in the humid atmosphere of the Gangetic Delta and on the dry table-land of the Deccan, there is probably no species indigenous or introduced that accommodates itself so readily to altered conditions and yet remains so absolutely true to its essential characters as does *A. mexicana*. An examination of the specimens from Africa, where it occurs from the Cape to Algeria, from Socotra to Senegal, shows that in this continent also the same is absolutely true. Seeing that this is so, we are compelled, unless we are prepared to forego any attempt at classification whatsoever, to separate, once for all, the white-flowered Argemones from the yellow-flowered ones. But within the yellow-flowered group itself we find quite sufficient difficulty, for though the statement that *A. mexicana* is variable outside America is incorrect, we do find in the New World specimens with yellow flowers that seem at first to bear out the general contention as to the variability of *A. mexicana*. Here again, however, a more careful examination shows that the assumption is hypothetical, and is due not to any variability in the flowers or fruit of *A. mexicana*, but to a want of care in separating from it a quite distinct form as constant apparently in essential characters as itself. There is no doubt that what has been the cause of this misapprehension is the fact that this second plant is really a Mexican one, while that which bears the name *A. mexicana* is in Mexico only an introduced one, occurring occasionally on the eastern coast in the vicinity of seaport towns. Though the differentiation of these two is always easy, and though no intermediate forms are as yet reported, I have, following Lindley, treated them here as varieties of one species, which thus includes all the yellow-flowered forms except *A. fruticosa;* even if Sweet's differentiation of *A. ochroleuca* be ultimately sustained, there is no doubt that the two constitute a natural group of forms.

The question which next arises is whether the whole of the white-flowered forms can be treated as one species. If this were possible, we should then have but three species in the genus, viz., *A. fruticosa*, *A. mexicana*, and *A. alba*. But a closer examination of these white-flowered Argemones shows that this treatment is impossible, and that it is necessary to recognise at least eight distinct white-flowered Argemones which arrange themselves in four definite groups, here treated as "species." The reasons for this treatment are indicated in the key which follows, and are more fully explained in the notes appended to each "species," where, at the cost of a certain amount of unavoidable repetition, the facts stated in the foregoing paragraphs are more fully detailed.

Medical qualities have been attributed to *Argemone* in America by the Mexicans, whose ideas have been accepted by the Spanish residents of Mexico and South America. Their common belief in its efficacy in the treatment of syphilis has passed, probably through the Portuguese, into Eastern Africa; it is noted by Taylor on specimens at Kew, from Mombasa, that the natives there make use of it in this ailment. The oil of *Argemone* is said by Dymock to be medicinal; this oil has been examined by Wittstein and Mueller. The Argemones begin to flower in Mexico in March; in the Rocky Mountains, Nevada, &c., not till September and October. The following have been introduced into Europe as garden plants, their showy flowers and their white-veined leaves rendering them acceptable:—*A. mexicana* (introd. 1592); *A. alba* (before 1783); *A. ochroleuca* (before 1790*; 1828); *A. grandiflora* (1827); *A. platyceras* (1827); *A. intermedia* (1830*; 1878*); *A. rosea* (*Hunnemannii*) (1833*); *A. stenopetala* (1885*).†

The area in which the genus is indigenous includes Mexico, the West Indies, and the Western and South-eastern United States. In Mexico occur *A. grandiflora*, *A. mexicana* (*ochroleuca*), *A. platyceras*, *A. intermedia* (*vera* and *stenopetala*), and *A. fruticosa*. The first and last mentioned are confined to Mexico; *A. ochroleuca* extends, probably introduced, throughout the western and southern portions of S. America, and is naturalised in Australia; *A. platyceras* extends northward throughout California, Arizona, and Western Texas, and is represented in the Great Basin and the Rockies by *A. hispida*, in Chili by *A. rosea*, the latter being probably an introduced form altered by its environment; *A. intermedia* extends through New Mexico and Texas to the western prairies. *A. mexicana* (*vera*) is indigenous in the West Indies, and has become naturalised in all tropical and subtropical countries, except the Pacific American coasts. *A. alba* (*vera*) is confined to the South-eastern United States, but in the Sandwich Islands occurs a form *A. glauca*, which is perhaps only an altered introduced condition of this species.

Clavis specierum varietatumque Argemones.

Fruticosa; foliis ilicinis; capsula fere ad basin usque soluta (petalis luteis) . . . . 1. A. FRUTICOSA.

Herbaceæ; foliis cnicoideis; capsula triente summo soluta:—

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† The * indicates that the cultivation of the form was not continued after the date of introduction mentioned.

Floribus luteis . . . . 2. A. MEXICANA.
[Stylo subnullo. Var. *typica* (=*A. mexicana* L.).
Stylo distincto. Var. *ochroleuca* (= *A. ochroleuca* Sweet).]
Floribus albis:—
Bracteis secus ramos florales dispositis:—
Capsula valvis teneribus aculeata, sepalorum cornubus minoribus . . 3. A. ALBA.
[Foliis floribusque minoribus aculeis ascendenti-patentibus. Var. *typica* (= *A. alba* Lestib.)
Foliis floribusque majoribus aculeis reflexo-patentibus. Var. *glauca* (= *A. glauca* Nutt.).]
Capsula valvis crasse coriaceis vix armata, sepalorum cornubus elongatis 4. A. GRANDIFLORA.
Bracteis sub flores aggregatis:—
Capsula valvis teneribus sparse aculeata, sepalorum cornubus extus lævibus 5. A. INTERMEDIA.
[Ramis floralibus elongatis, sepalorum cornubus pyramidalibus. Var. *typica* (= *A. intermedia* Sweet).
Ramis floralibus perbrevibus, sepalorum cornubus teretiformibus. Var. *stenopetala* (= *A. stenopetala*).]
Capsula valvis crassis densissime aculeatis, sepalorum cornubus extus aculeatis . . . . 6. A. PLATYCERAS.
[Alabastris globosis:—
Foliis cauleque aculeatissimis sed glabris, petalis apice truncatis. Var. *typica* (= *A. platyceras* L. & O.).
Foliis cauleque hispidis, petalis apice rotundatis. Var. *hispida* (= *A. hispida* Gray).
Alabastris oblongis. Var. *chilensis* (= *A. rosea* Hook.).]

(To be continued.)

DAVID LYALL, M.D.

David Lyall was born at Auchinblae in Kincardineshire, June 1st, 1817, and after a long period of active service as a medical officer and naturalist in the Royal Navy, he retired in 1873, and died at Cheltenham, March 2nd, 1895, with the rank of Deputy Inspector-General of Hospitals and Fleets and a Good-Service

Pension. Dr. Lyall received his medical education at Aberdeen, where he took his M.D. degree, having previously been admitted a Licentiate of the Royal College of Surgeons, Edinburgh. As was not unfrequently the case with young Aberdonian medical men, he sought to improve his medical knowledge, and throw himself early on his own resources, by undertaking a voyage to Greenland as surgeon to a whaling-ship; and this no doubt led to his being selected, immediately after entering the Royal Navy in 1839, for service under Sir James Ross in the expedition then being fitted out for a scientific voyage to the Antarctic Regions. He was appointed Assistant-Surgeon of H.M.S. 'Terror' (the consort of H.M.S. 'Erebus') under Commander Crozier, to which duties Sir James (then Captain) Ross added those of forming botanical collections.

During this voyage, which did not return to England till late in 1842, his conduct was officially reported to the Admiralty as "meriting the highest commendation." The writer of this notice was a brother officer of Dr. Lyall's during that expedition (an intercourse that led to a lifelong friendship), and has added his tribute to the value of his services in the following passages:—"To him were due many of the botanical results of the expedition" (*Fl. Antarctica*, vol. i. p. xii). "He formed a most important herbarium, amounting to no less than 1500 species"; he also, during the five winter months of 1842, when the ships remained in Berkeley Sound, made a "beautiful collection of interesting Algæ," which formed "an important addition to Antarctic botany" (*op. cit.*, part ii. 215). On this expedition was found, in Kerguelen's Land, the remarkable plant named by the writer *Lyallia*.

Shorly after the return of the Antarctic Expedition Dr. Lyall was appointed to the Mediterranean, where he served in several commissions as Assistant-Surgeon till 1847, when he was promoted, and, at the recommendation of Sir W. Hooker, was selected as Surgeon and Naturalist to accompany Capt. Stokes in H.M.S. 'Acheron' on the survey of the coast of New Zealand. Here, devoting himself to the collection of the lower orders of plants especially, he amassed the most beautiful and extensive herbarium in these branches of botany which had ever been formed in the islands, besides making considerable discoveries in phænogamic plants, and collecting some that had only been previously gathered by Banks and Solander. Among his many important botanical discoveries in this survey was that of the monarch of all buttercups, the gigantic white-flowered *Ranunculus Lyallii*, the only known species with peltate leaves, the "water-lily" of the New Zealand shepherds.

In 1852 Dr. Lyall was appointed Surgeon and Naturalist to the 'Assistance,' one of the squadron sent out to the Arctic Regions, under the command of Sir E. Belcher, in search of Sir John Franklin. When in this service he received an acting order as lieutenant in command of one of the sledges employed in the search; and further, as senior medical officer of the expedition, he was appointed Superintending Surgeon of the 'North Star,' when the crews of the 'Investigator,' 'Resolution,' and 'Intrepid,' and the invalids of the

'Assistance' and 'Pioneer,' retreated to that ship. During this Arctic Expedition Dr. Lyall made good collections at every point visited, from Disco to the Polar Islands. A list of these is published in the *Journal of the Linnean Society*. It contains about ninety phænogams and vascular cryptogams, and a large number of Musci, &c. Exclusive of Greenland, this is far the largest herbarium ever formed in the American Polar Islands, and exceeds the sum of those of all previous expeditions in the same regions; but, as was to have been expected, no novelties rewarded his labours. On his return he was appointed to the 'Pembroke,' Capt. Seymour, under whom he served throughout the Baltic Campaign of 1855, and was present at the bombardment of Sveaborg.

After a short period of home service in the 'Royal William' at Devonport, Dr. Lyall was commissioned as Surgeon and Naturalist to H.M.'s surveying ship 'Plumper,' and afterwards to the 'Hecate,' under Capt. (now Admiral Sir George) Richards, employed in the delimitation of the sea boundary between Great Britain and the United States in the Pacific Ocean. From this his services (in 1858) were transferred to the Land Boundary Commission, under Col. Sir John Hawkins, R.E., which he accompanied in its survey of the boundary line between British Columbia and the United States possessions, from the Gulf of Georgia to the summit of the Rocky Mountains. From this expedition Dr. Lyall brought home a magnificent herbarium, one of such importance that, at the earnest representation of Sir William Hooker, he was borne on the books of H.M.S. 'Fisguard' at Woolwich as Staff-Surgeon, a vicarious appointment that allowed of his residing at Kew for the purpose of arranging, reporting on, and distributing his collections. The results are published in a valuable contribution to the Linnean Society,* which contains an excellent botanical account of the regions traversed, from the sea to 8000 feet alt. of the Rocky Mountains, where the various zones of vegetation in British Columbia are for the first time indicated and scientifically pourtrayed. Immediately after the conclusion of his labours at Kew Dr. Lyall was appointed Surgeon to Pembroke Dockyard, at that time a permanency; and when the regulations affecting this branch of the service (the dockyard) were changed in 1868, he accepted home appointments to H.M.S. 'Trincomalee' and 'Dædalus' consecutively till 1873, when he retired. Latterly he resided at Cheltenham, where shortly before his death he met with an accident, the breaking of an arm, from the effects of which he never wholly recovered.

Dr. Lyall's only other published contribution to science was a paper on the habits of a remarkable New Zealand bird, the Kakapo, *Strigops habroptilus*.† He married in 1866 Miss F. A. Rowe, daughter of Dr. Rowe of Haverfordwest, by whom he had three children who survived him. He was elected a Fellow of the Linnean Society in November, 1862.

J. D. HOOKER.

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* "Account of the Botanical Collections made by David Lyall, R.N., M.D., F.L.S.," *Journ. Linn. Soc.* vii. 1863, pp. 124—147.

† *Proceedings of Zoological Society*, xx. (1852), 31—33.

AMERICAN NOMENCLATURE.

[The revolt against the arbitrary *dicta* of certain American botanists, which has, as we have shown, been growing for some time, has found expression in a memorandum which is being widely circulated, and has received the signatures of seventy-four Americans. Among these are such well-known names, even on this side of the Atlantic, as L. H. Bailey, M. S. Bebb, D. C. Eaton, W. G. Farlow, G. L. Goodale, T. H. McBride, J. Macoun, and T. Meehan, while the others represent a large proportion of American workers.

The main lines of the memorandum are those which have been consistently advocated in these pages: and our differences from it, so far as they exist, are on very minor points. That the action of those who have formulated the "Rochester Code" has excited much opposition among American botanists has for some time been obvious,* and the following extract from a private letter shows how strong a feeling exists against the proposed innovations. The charge of suppression with which it concludes, serious though it be, will surprise no one who remembers the method by which Asa Gray's last words on nomenclature were withheld from publication.†

"We are now in a very critical position in this country. A good many botanists really prefer to maintain the Candollean system, but there are a certain number of very energetic botanists who have tried to force an entire change of system and names, and, being loud-mouthed and proclaiming the O. Kuntzian method as modified by themselves as the only method of stability, they have persuaded some and intimidated others. There are always a good many persons ready to go with the crowd, and they join the so-called reform party. I do not know what the result will be. Those who prefer the Candollean method get no aid from Kew or other European authorities, whereas the other side claim that they are supported by Germany and the Continent. If an international congress is called, and a system formulated, it will be next to impossible for all Americans to avoid adopting that system, whatever it may be, and it is pretty sure not to be the old Candollean system, although it will not be the so-called Rochester Code of this country. Personally I detest the use of a parenthesis and the use of the oldest specific name. . . . . An international congress, if called together, would not endorse all the wildness of the Rochester Code as it is now being forced upon us; and to follow an international code framed after serious discussion would be much better than to struggle along in the present confusion. You have no conception of the violence of the discussions on nomenclature now going on in this country. The only two botanical journals are controlled by the 'reformers,' and they claim that the American system is endorsed by Berlin and the Continent generally, and that Kew and Harvard are the only places opposed. That is not the fact, but the journals in question will not accept articles which give a true account of what has been said against the American system in Berlin and Vienna. A notice stating the facts was sent to *Science*, and actually put in type, but the botanical editor suppressed it. It was then sent to the *Botanical Gazette*, but was declined."

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* See *Journ. Bot.* 1895, 19, 149.

† See *Journ. Bot.* 1894, 19.

The following is the Memorandum referred to, which we reproduce in full:—]

RECOMMENDATIONS REGARDING THE NOMENCLATURE OF SYSTEMATIC BOTANY.

We feel constrained to protest against the recent attempts made in the United States to change botanical nomenclature on theoretical grounds. In our opinion most of the suggested changes, even if they were generally adopted, could lead only to great confusion. An explanatory statement of the reasons which compel us to take this action is herewith briefly given.

So far as the nomenclature of systematic botany is effective it has been and should be developed only in intimate relation to scientific investigation, and must be subject to constant modification with varying ideas of plant-affinities. Although attempts may be made to control its growth, its real development, especially as to generic names, is largely determined by usage. By judicious recommendations greater and greater uniformity in the application of botanical names may doubtless be obtained, but to make rules* at serious variance with the customs of the past and to give them retroactive effect can only tend to complicate botanical language. For even if we depart from the nomenclature of former writers, we can by no means avoid the constant necessity of using their works. Guided as to nomenclature by general custom, writers of the last hundred and fifty years have accumulated the vast quantity of facts, and produced the voluminous literature, of our science. While its nomenclature is by no means uniform, it is, with unimportant exceptions, readily intelligible to working botanists. To reform this nomenclature upon theoretical grounds will not alter the importance of works of the past, which are likely always to remain the historic basis of classification. Thus the result of any serious change would be the necessity of acquiring two sets of names instead of one. Realizing keenly how serious would be the burden thus imposed not only upon systematists, but upon all who are interested in any branch of botanical research, as well as in the more practical aspects of the science, such as pharmacy and horticulture, the undersigned urge postponement of any radical measures of reform.

One of the most essential features of an efficient botanical nomenclature is a cosmopolitan character. It is very unlikely, therefore, that any lasting or satisfactory modification of the present system can be effected without international agreement.* Whether this can be obtained, and can lead to practical and generally acceptable results, remains to be seen, but certainly until the subject can have further international consideration, it is likely that radical changes will do much more harm than good. The recent suggestions for reforming botanical nomenclature in the United States are not in accord with the usage of any other nation, nor are they, in the light of recent foreign publications, likely to meet with favour, to say nothing of general adoption, outside of our own country. Even if the proposed reform could be carried out in America, it would thus give a most unfortunate local tendency to scientific expression, and thereby do much to stultify the whole system of Latin nomenclature, which has been elaborated largely for international convenience. For the present, therefore, serious changes cannot be too scrupulously avoided, and as a basis of publication the following rules are recommended as those most conducive to stability, without the disadvantages of a more rigid code. These rules are designed to apply only to phænogams and vascular cryptogams. Botanists of all departments, however, are constantly obliged to make use of phænogamic names, and all are therefore more or less concerned in the preservation of a convenient phænogamic nomenclature.

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* For example, the recently proposed principle of "once a synonym always a synonym," and the still more arbitrary ruling that a variety and species may not hold the same name under one genus.

1. Ordinal names, having been established by long usage, should not be subjected to revision upon theoretical grounds.

2. Long-established and generally-known generic names, such as *Liatris*, *Desmodium*, *Dalea*, *Calycanthus*, *Carya*, *Aspidium*, and others, should be retained. While the scope of this rule is left to the discretion of writers, it is urged that generic nomenclature should not at present depart far from that of the three important works, Bentham and Hooker's *Genera Plantarum*, Baillon's *Histoire des Plantes*, and Engler and Prantl's *Natürliche Pflanzenfamilien*, from which for some time to come our most complete and accurate information, as to generic limits and affinities, is to be derived.

3. In specific nomenclature the first correct combination is to be preferred. The theoretical reason for this is clear. The specific name is adjectival in its nature, and, parted from its generic noun, loses its significance. Moreover, the transfer of a misplaced plant to its correct genus is in general a more important service than its description under an incorrect genus, and the first correct combination of generic and specific names is therefore justly worthy of regard. But the most important reason for adopting this ruling lies in the practical stability to be derived from it. For in nearly all cases the first correct combination can be definitely ascertained. On the other hand, if there is any departure from this principle, and any attempt to combine earlier specific names with those of the accepted genera, there must be a lasting doubt as to the validity

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* From the published statements of prominent German and Austrian botanists, there is every prospect that the whole subject of botanical nomenclature will meet with early consideration by representative internationa congress, to be convened at an early date.

of nearly all post-Linnean specific names. For very few of them can be so securely established that they will be free from constant danger of being displaced by the discovery, in some obscure work, of slightly older names used perhaps under remote genera. Added to this inherent lack of stability, the unqualified adoption of the first specific name leads to indefiniteness through the constant endeavour to base our nomenclature upon more and more remote, fragmentary, and obscure descriptions of the past, such as those of Rafinesque, while in general the first correct combinations, having been formed in more recent times, when generic and specific limits were better understood, have been based upon or accompanied by fuller descriptions, forming a much sounder foundation for nomenclature. For these reasons it seems best to adopt the principle of priority under the genus, the whole question of determining in individual cases the proper scientific name being thus greatly simplified, since all competing names are under the same generic designation. It is to be emphasized, however, that this ruling does not lessen the obligation of botanists of the present and future, in making a transfer of a species from one genus to another, to preserve scrupulously the specific name without alteration, except in the case of an existing homonym.

4. The varietal name is to be regarded as inferior in rank to the specific. The variety is the least definite category of classification, and varietal names have not only been treated with much greater laxity than the specific, but are generally unindexed, so that it would be a work of years to collate them. To bring them (as advocated by certain recent works) into active competition with specific names would thus tend immeasurably to increase the difficulties of an ultimate settlement of specific nomenclature. The rule that a variety may not hold the same name as a species in the same genus is highly arbitrary, and would lead not only to the renaming of thousands of varieties, but the practical impossibility of using in large genera like *Aster*, *Solidago*, *Senecio*, *Solanum*, and *Carex* any telling descriptive names for varieties, since all such have long since been used for species.

No specific name should be altered because of pre-existing varietal names for the same plant. Nevertheless, it is recommended as a working rule that whenever a variety is raised to specific or a species depressed to varietal rank the name should be preserved whenever possible.

5. The principle of "once a synonym always a synonym," while recommended as an excellent working rule for present and future, may not justly be made retroactive.

Mr. L. H. Bailey's signature is qualified by the following reservation:—"As a statement of the principles or theory of binomial nomenclature, I concur with the above argument, but I am unwilling to subscribe to any code until it shall have been carefully considered by representative assemblies of botanists of the country or the world. Binomial nomenclature is but a special form of language, and all permanent progress in language, as in all other human institutions, is known to be the result of an evolution or growth of the new out of the old. I am convinced that mere arbitrary and artificial standards—such as those lately proposed—cannot have an abiding value. In fact, in the immediate application of them they may admit of as many variations and errors of judgment as the methods do which they are designed to supplant. The starting-points of the proposed new nomenclature seem to me to be more vague and uncertain than those of the old. This is particularly true of the use of the oldest specific name as compared with the use of the oldest complete name or combination. I therefore believe that usage is the only foundation upon which an enduring and intelligible structure can be built."

SHORT NOTES.

Plant-remains in Peat. — The following note may supplement Mr. Gepp's article in the June number. I recently had a specimen of a hard peaty substance given me, which had been dug up near Hollow Drove, Ramsey Fen, Hunts, and which on examination proved to be almost entirely composed of fragments of a single species of moss, *Camptothecium nitens* Schreb., compressed into a block of compact almost woody consistency, very brittle when dry, but only needing to be soaked in water to restore the leaves sufficiently to allow of easy recognition under the microscope; indeed, some of the stems were an inch long, and almost intact; but the greater part was fragmentary, and showed that it was probably an agglomeration of broken pieces of plants, not the remains of a bed of moss *in situ.* The striking part of it was the quantity of material; my informant stated that it extended over "a large plot," and averaged a foot thick, the whole being, in his opinion, formed of the same material. It lay from two to three feet below the surface, the supervening soil being, he believed, the ordinary undisturbed peat of the fens; this was being removed, probably for the purpose of erecting farm buildings, when the stratum in question was laid bare. It is rarely that we find a tract that can be measured by square yards composed entirely of a single species of moss, even of *Sphagnum*, and it argues an unusual abundance of the plant in question that such a mass of *débris* should apparently consist of it alone; in the specimen brought me, weighing perhaps a pound, I have not been able to find a single fragment of any other moss. It is the more interesting because *C. nitens* is now hardly to be found in the southern half of England, a single locality in Norfolk mentioned in Wilson's *Bryologia Britannica* constituting the only locality south of the Mersey, so far as I am aware, whence it has been recorded in modern times. I can form no opinion as to the probable age of the above deposit.—H. N. Dixon.

Carex pauciflora in Ireland.—While searching for mosses and hepatics in June, 1889, on the mountains near Parkmore, at the head of Glenariffe, Co. Antrim, I found a huge tussock of *Sphagnum*

Austini Sull. and a tuft of a *Carex* which I made out to be *C. pauciflora* Lightf. The habitat was at an elevation of 1000 feet. The *Sphagnum* had not previously been found in Ireland, and I have since collected it on the Bog of Allen, near Glashill, in King's County (*Irish Naturalist*, ii. 22). The *Carex* also does not appear to have been previously discovered in Ireland. The specimen lay in my herbarium till January of this year, when I submitted it to Mr. Arthur Bennett, who verified my find. He also furnished me with the distribution of *C. pauciflora* in Europe, as follows:—Iceland; England; Scotland; Norway, North and Middle; Sweden; Denmark; Germany; Belgium (Ardennes); France (Vosges, Jura, Mts. Dores and Forez, Alpes); Switzerland; Italian Alps; Austria; Hungary; Transylvania; Carinthia; Russia, Middle. In Northumberland and Yorkshire it occurs at a comparatively low elevation.—H. W. LETT.

THE 'LONDON CATALOGUE,' ED. 9.—The responsibility for italicizing *Festuca heterophylla* is not mine. I declined to do more than make suggestions on the genus; and the introduction of this grass is as much "not proven" as that of *Falcaria*, which has been known to grow in E. Kent ever since 1858. The name *Carex ventricosa* Curt. can hardly be displaced by *C. depauperata* Curt. on such slender evidence, especially in view of Curtis's express preference for the former, which is also much more apt. The plant which was to have been named *Hieracium Lintoni* proved to be a Scandinavian species, *H. pseudonosmoides* Dahlst.; it is one of our most distinct hawkweeds, and has simply reappeared under its proper title. The Hieracia (fairly numerous) which I have growing keep as constant as any other plants, come up true from seed, year after year, and do not appear to hybridize with one another.—EDWARD S. MARSHALL.

[It is satisfactory to have *Hieracium Lintoni* cleared up, but Mr. Marshall's explanation fully justifies our suggestion that more "reticence might be observed" in the publication of new Hawkweeds. The description of *H. Lintoni* was in type for Mr. Hanbury's 'Notes' (*Journ. Bot.* 1894, 225-233), and was only withdrawn at the last moment, and at some inconvenience; and it seems a pity that its identity with *H. pseudonosmoides* was not then indicated.—ED. JOURN. BOT.]

NEW WORCESTERSHIRE RECORDS. — Mr. Charles Waterfall has kindly supplied me with specimens of *Fumaria parviflora* and *Euphorbia Esula* var. *Pseudo-cyparissias*, recently gathered by him at Ripple. The latter he first met with at this station in 1893. Both are new county records. I may add that one plant of *Euphorbia Esula* (type) was found by the late Capt. A. Steuart and myself, growing among corn at Bransford, Worcestershire, in 1892, but it was evidently an introduction with seed. — RICHARD F. TOWNDROW.

GALIUM SYLVESTRE Poll. IN WORCESTERSHIRE. — This plant was met with, in some plenty, in a pasture at Malvern Wells, during an excursion of the Malvern Field Club on June 6th. In *The Stranger's*

Guide to Worcester, by Ambrose Florence (Edwin Lees, 1828), it is included, under the name of *Galium pusillum*, in "A Catalogue of Plants growing wild in the vicinity of Worcester," with the station, "East side of Red Hill." In *Topographical Botany*, 37 (Worcester) is bracketed with other counties as "insufficiently vouched," and Mr. Lees appears also to have doubted the authenticity of the record, as he omits any mention of the species in his *Botany of Worcestershire*, published in 1867.—Richard F. Towndrow.

NOTICES OF BOOKS.

Nomenclature.

Kuntze, Otto. *Nomenclatur-Studien. Extrait du Bulletin de l'Herbier Boissier.* Tome II., No. 7, Juillet, 1894. 8vo, pp. 456–498.

This consists of ten sections as follows:—1. Thouars's orchid names are not to be rejected. 2. "Priority in place in at all events." 3. Obligatory index for plant-names. 4. Some false expositions by Dr. Pfitzer. 5. Rejection of orchid names from linguistic and orthographic considerations. 6. "Once a synonym always a synonym" contrary to Art. 60 and 28. 7. Publications since 1735 with partially unsuitable nomenclature are not to be excluded. 8. Sundries about orchids. 9. Corrections of orchid names. 10. Concluding remarks; the future Congress.

Practically this pamphlet resolves itself into a reply to Dr. Pfitzer's attack in Engler's *Jahrbücher*, 1894, pp. 1–28, with additional onslaughts on the American novelties, which are distinguished by the citation of their favourite formulæ. Dr. Kuntze brings his heaviest artillery to bear on what most people will consider too absurd to merit further notice; thus he shows in section 2, that were such practice to obtain, *Astragalus* must sink in *Phaca*, *Senecio* in *Cacalia*, *Potentilla* in *Sibbaldia*, *Prunus* in *Amygdalus*, *Chenopodium* in *Blitum*, and so on. Section 6 shows a still longer list of authorities for keeping to the usual practice.

Erklärung der Geschäftsleitung der vom internationalen botanischen Congress zu Genua (1892) *eingesetzten Nomenclatur-Commission. Abgegeben während der* 66. *Versammlung deutscher Naturforscher und Aerzte in Wien in der Sitzung der Abtheilung für systematische Botanik am* 25. September, 1894. (Separat-Abdruck aus der *Oesterr. botan. Zeitschrift*, Jahrg. 1895. No. 1.) Wien, 1895. 8vo, pp. 10.

In this modest pamphlet we have an account by Drs. Ascherson and Engler of the various steps which, since the publication of Dr. Kuntze's *Revisio* in the autumn of 1891, have been taken by botanists to secure a consensus of opinion as to the proper course to be followed in the question of nomenclature. The excitement caused by the issue of his volumes was at its height when the Genoa Congress was held in September, 1892, and resulted in the appointment of a commission of thirty members of various nationalities to consider the question in all its bearings, and to report to some future congress. Difficulties arose which hindered the early completion of this report. Two of the three English members excused themselves from serving, namely, Sir Joseph Hooker and Mr. J. G. Baker, and finally the two authors of this report were induced to undertake the work.

The entire paper should be read in its complete form, as it is too full of matter to readily lend itself to a mere abstract; suffice it here to say that the principle of prescription is advocated, the term of fifty years being selected. This would secure the retention of the greater proportion of the names published in De Candolle's *Prodromus*, and about 6000 of Kuntze's alterations fall on that account. The conclusions which are deduced by the authors themselves are summarized as follows:—

1. The rule that a name once current but later rendered inapplicable, should not be again revived, is recommended for future use; but retroactive action is excluded, and names changed on these grounds are to be rejected.
2. On transferring a species from its original genus to another the original specific name is to be retained.
3. The date of 1753 is to be adhered to as the starting-point both for genera and species.
4. The principle of priority is to be applied in moderation: a name of certain application is not to be dislodged by a doubtful one.
5. In naming genera, a name which has been neglected for fifty years or more is not to displace the corresponding one in common use.

The last statement is subject to one exception, that is, when the name in question has been in use at least fifty years since its re-adoption.

These general conclusions seem to offer an effective compromise; it will of course not satisfy the extreme men of either side, but as it advises the introduction of the *status quo*, the suggestions come with the force of sound reason and sense, especially after a perusal of certain hysterical articles which need not be named. The weight attaching to our authors in this case is not diminished by remembering that neither was prejudiced in favour of the old rules, that both had shown their sympathy for certain innovations, and to them therefore the greater compliment is paid by acknowledging their courage and honesty in declining to pursue any farther a course which can only lead to the hindrance of practical botany.

The final sentence is a wish that botanical nomenclature could be placed on the same footing as zoological. To this we would remark that the two things are not comparable, having totally different ends in view.

KUNTZE, OTTO. *Bemerkungen zum künftigen botanischen Nomenclatur-Congress.* (Separat-Abdruck aus der *Oesterr. botan. Zeitschr.* 1895. No. 5.) Pp. 5.

THE author's remarks on the previous paper, the conclusions of which are naturally not to his liking.

B. D. J.

A Handbook of Systematic Botany. By Dr. E. Warming. With a revision of the Fungi by Dr. E. Knoblauch. Translated and edited by M. C. Potter, M.A., F.L.S. 8vo, pp. xii, 620. With 610 illustrations. London: Swan Sonnenschein & Co. 1895. Price 15s.

Within a few days of the publication of Prof. Vines' *Text-book* as a complete work Messrs. Sonnenschein have brought out another book of the same price, and covering to a great extent the same ground. In the *Text-book* the more advanced student has, what he has been wanting for some years, a modern account of the morphology, classification, and physiology of plants, sufficient at any rate to give him a substantial grounding before proceeding to special treatises on the various branches. For fifteen shillings he gets 837 pages. The *Handbook of Systematic Botany* is smaller by 200 pages, and as it is a translation, compares unfavourably as regards cost. Moreover it corresponds only to the systematic portion of the *Text-book*, that is to say, devotes its 620 pages to what is disposed of in 450 pages in the other. Here also the difference as regards a fuller treatment is largely confined to the Angiosperms, which occupy 300 and 130 pages respectively in the two books, and this portion we presume supplied the reason for Mr. Potter's work. Handbooks are presumably for the use of students, who will doubtless consider these points before investing in one which necessarily repeats matter with which they are already acquainted.

As to the excellency of Dr. Warming's *Handbook* there can be no doubt, and not a few botanists will be grateful to the translator for the opportunity of reading it in English. For these the chief interest lies in the arrangement of the Thallophytes and Angiosperms. The former group has been re-arranged and revised in co-operation with Dr. E. Knoblauch, the editor of the German edition. The Bacteria have been revised by Dr. Migula, the Florideæ re-arranged after the late Dr. Schmitz, and the Taphrinaceæ after Dr. Sadebeck. The Algæ are divided into ten classes, Syngeneticæ, Dinoflagellata, Diatomaceæ, Schizophyta, Conjugatæ, Chlorophyceæ, Characeæ, Phæophyceæ, Dictyotales, and Rhodophyceæ. Bacteria are included under Schizophyta as colourless Algæ. We always pity the student when he comes to the Algæ. Considering how difficult it often is to get the plants and to observe them when got, this portion of a text-book is generally most inadequately illustrated; Dr. Warming gives a fair number of figures, though many of the plates have got rather worn before reaching the present edition. Then, again, writers are so bewilderingly diverse in their ideas on arrangement, and what is still worse from the student's point of view, may even hold widely different opinions on an examination "type." *Protococcus*, for instance, according to one possesses planogametes; according to another, is satisfied with a purely asexual mode of reproduction. The *Handbook* gets over the difficulty by dropping it out altogether. We find a family *Protococcoideæ* including an order *Protococcaceæ*, but never a sign of *Protococcus*. The chapter on "the transition of the Cryptogams to the Phanerogams" is a useful one, but the editor should have corrected the description of the male prothallium of the Gymnosperm, in which the vegetative cell is made to represent the antheridium. But the most useful part is the account of the Angiosperms, occupying the second half of the book. The classification is very different from that found in English text-books, based on Bentham and Hooker's system as worked out in their classical *Genera Plantarum.* It purports to be a more natural arrangement, tracing as far as possible in each group the advance from the simpler to the more complex and derived forms. As such it has considerable interest, and is eminently suggestive. Among other things it shows how unsatisfactory in our present state of knowledge are all such attempts. Affinities are occasionally somewhat forced, as, for instance, when Juncaceæ are placed far away from Liliaceæ, and included in Glumiferæ with Cyperaceæ and Gramineæ. An important feature in the accounts of the various natural orders is the insertion of notes on pollination and theories of floral symmetry. The editor's appendix, in the shape of a sketch of the history of plant classification, will also be useful.

As regards the translation we cannot judge of its accuracy, but Mr. Potter's English sometimes leaves a little to be desired. Slovenly sentences are frequent; there is a too liberal use of the definite article, and the objectionable "and which" is not absent. Italics are too largely employed, and are sometimes meaningless, as on page 284, "the leaves (in grasses) are often arranged in three *rows.*" Bad spelling crops up repeatedly. Chlorophyll is sometimes rendered chlorophyl; and we find cyanophyll, but pyrrophyl and melinophyl. On page 281 leaves are said to be "radicle," and in the succeeding line we read "the *lamina* have." Gynæceum, gynœcium, and gynœceum, are all used; the last seems the favourite form. It was a little unkind in those gentlemen to whom the translator records his obligations for revising the proofs, not to have corrected, or drawn attention to, such very obvious mistakes.

A. B. R.

The Elements of Botany. By Francis Darwin, M.A., F.R.S. 8vo, pp. 235, with 94 figs. University Press, Cambridge. 1895. Price 6s.

In the March number of this Journal we noticed a practical handbook on plant-physiology, of which Mr. Darwin was joint author. The little volume now to hand is another of the same series of natural science manuals in course of issue under the general editorship of Mr. A. E. Shipley. The fourteen chapters into which it is divided give the substance of as many lectures, which form the botanical portion of the Cambridge course in Elementary Biology; while an appendix supplies the detail of the accompanying practical work. But the book will command a wider use than preparation for the first M.B. examination; and teachers outside the University will welcome so admirable, trustworthy, and scientific an introduction to the study of Botany. Unfortunately its exorbitant price will seriously limit its usefulness. There are several new figures, but they are not elaborate, nor is there anything in the neat and sufficiently elegant "get-up" of the whole to explain the six shillings.

Any one who knew the Cambridge Elementary Biology Course ten years ago will be struck with the great and fundamental change in the arrangement. Then the type system, borrowed from zoology, was in full swing. The student was taken carefully through the life-histories of seven or eight plants, beginning with yeast and finishing with the bean. At the end of the course it was his own fault if he had not learnt something about them. But the natural history of plants was still a sealed book, and the knowledge gained, though extremely valuable, did not tend to excite him to observe and study growing plants out of doors. Mr. Darwin's *Elements* marks a higher stage of evolution in the treatment of the subject. "We have not," he says, "attempted to adhere to a small number of species, but have preferred to fix on certain phenomena, and to make use, as far as the schedule permits, of the plants which most strikingly and conveniently illustrate them." The morphology, physiology, and natural history of phanerogams is not illustrated only by the bean, but other well-known plants are pressed into service for the study of the various parts and their functions. The student who has honestly worked through the course, including the practical exercises, will have acquired not only a good idea of the general principles of Botany, but also an interest in the natural history of plants, and should be induced to observe further for himself the methods of fertilization, the distribution of fruit or seed, and various phases of the struggle for existence going on around him.

A. B. R.

Object Lessons in Botany from Forest, Field, Wayside, and Garden. (Book ii., for Standards III., IV., & V.) Being a Teachers' Aid to a Systematic Course of One Hundred Lessons for Boys and Girls. By Edward Snelgrove, B.A. 8vo, pp. xviii, 297, with 153 figs. London: Jarrold & Sons. (No date.) Price 3s. 6d.

A year ago we noticed a more elementary book of the same kind by the same author, forming, in fact, an introduction to the present work, which is to be followed by a third more advanced course. We congratulate Mr. Snelgrove on his second venture. It is hard to imagine a more useful set of lessons, better arranged or more clearly put; all who have to do with the education of children "from nine to eleven years of age" will do well to take the book for their guide, and, having done so, will, we are convinced, gladly acknowledge their indebtedness to its author. There are four sections, the substance of which is so arranged that each is an increase in difficulty on the previous one. The first deals, in 32 lessons, with leaves, stems, and roots, their forms and functions; the second with flowers, in 36 lessons; the third with fruits and seeds, in 21 lessons; and the fourth with classification, in 11 lessons. In each lesson, if the teacher follows the directions given, the child is led to observe for himself the points of interest and scientific value in the specimens with which he has been provided. Thus not only is he likely to take a lively interest in the plants which he may find in the forest, field, wayside, or garden, but his intellect is quickened. He is being far more effectively educated than if he were declining Latin nouns or learning Euclid's definitions and axioms. Moreover, he will have acquired a very fair elementary knowledge of the external morphology of flowering plants, and be able to pass on to a more detailed study without having to unlearn anything (except to spell generic names with a small letter), and that is saying a great deal of a book of this class.

A. B. R.

ARTICLES IN JOURNALS.

Bot. Zeitung (June 1). — H. Vöchting, 'Zu T. N. Knight's Versuchen über Knollenbildung: kritische und experimentelle Untersuchungen.'

Bot. Centralblatt (No. 23). — M. Britzelmayr, 'Materialen zur Beschreibung der Hymenomyceten.' — S. Rostowzew, 'Nothgedrungene Erklärung.' — (No. 24). H. Steppuhn, 'Zur vergleichenden Anatomie der Dilleniaceen.' — K. Schilberszky, 'Zur Blütenbiologie der Ackerwinde.'

Bot. Gazette (May 20). — C. J. Chamberlain, 'Embryo-sac of *Aster Novæ-Angliæ*' (2 pl.). — W. F. Ganong, 'Present problems in the *Cactaceæ*' (concl.). — C. R. Barnes, 'Vitality of *Marsilia quadrifolia*.'—G. E. Davenport, '*Aspidium simulatum*.' — Memoir of J. A. Schroeter (1837–94).

Bull. Bot. Soc. France (xlii, 2: April). — P. van Tieghem, 'Sur les Loranthoidées d'Australie.' — Id., 'Genres de Loranthées.'— D. Clos, 'La vie et l'œuvre de P. Duchartre' (portr.). — P. Vuillemin, 'Transformation des ovules de Bègonia.' — J. Vesque, 'Revision du genre *Eurya*.'

Bull. Torrey Bot. Club (May 15). — A. Schneider, 'Biological status of Lichens.' — C. H. Peck, 'New Fungi.' — E. P. Bicknell, '*Hypericum boreale* and related species.' — V. Havard, 'Family Nomenclature.' — N. L. Britton, 'New or noteworthy N. American Phanerogams.'—A. Hollick, 'New plants from Cretaceous (Dakota Group) of Kansas' (2 pl.).—A. M. Vail, N. American *Malpighiaceæ* & *Zygophylleæ*.—C. L. Pollard, '*Zenobia*.'

Erythea (June). — E. L. Greene, 'Observations on *Compositæ*.' —Id., 'Novitates Occidentales.' — Id., 'Phytographic Notes.'— F. W. Wright, 'Oregonian forms of *Umbellularia*.'

Journal de Botanique (May 16). — J. C. Fehlmann, *Bellevalia ciliata* en France.—E. Mer, 'Influence de l'état climatérique sur la croissance des Sapins.' — E. Belzung, 'Marche totale des phénomènes amylochlorophylliens.'—(June 1). M. Gomont, *Calothrix stagnalis*, sp. n.—(June 1, 16). Drake del Castillo, 'Rubiacées trouvées au Tonkin par M. Balansa.'—E. Bescherelle, 'Mousses du Congo.'

Gardeners' Chronicle (May 25).— J. M. Macfarlane, 'Sarracenia at home.'—(June 8). G. Massee, 'Sleeping Disease of Tomatoes' (figs. 103–105).

Oesterr. Bot. Zeitschrift (June). — F. Höck, 'Ueber Tannenbegleiter.' — J. Pohl, 'Ueber Variationsmeite der *Oenothera La-*

marckiana' (1 pl.).—A. v. Degen, 'Ueber *Saxifraga pseudosancta* & *S. juniperina*.'—E. van Halácsy, 'Zur Flora von Griechenland.'—J. Dörfler, *Asplenium Baumgartneri* (1 pl.).

BOOK-NOTES, NEWS, &c.

The first instalment of *Die Pflanzenwelt Ost-Afrikas*, edited by Prof. Engler, includes four sheets of Part ii., on the economic plants, and six of Part iii., an enumeration of all plants yet known from "East Africa." On page 3 of the latter Prof. Engler tells us what is included in this rather vague geographical term. It is not confined to the German sphere of influence, as at present understood, but includes the following districts:—Zanzibar, Mossambique, Usagara-Usambara, the Masai Steppes and Highlands, Kilimandjaro, the Lakes district, Nyasa-land, and the Zambesi district. In the economic portion Dr. Warburg gives an account of the few useful Palms occurring in the district, and Prof. Schumann follows with the commencement of a similar account of the Grasses. The latter also contains matter of interest to the systematist, as on p. 55 the author establishes half a dozen varieties of *Panicum spicatum* subsp. *Willdenowii*. Illustrations have been borrowed from Engler & Prantl's *Pflanzenfamilien*: they are few in number, considering the popular interest that the work is assumed to have. The arrangement adopted in the purely systematic portion is that of the work just mentioned. In this first instalment the Cryptogams are dealt with, the last five pages including the Gymnosperms and beginning the Monocotyledons.

Judging from these five pages, which are all we have been able to examine, the execution of the work leaves something to be desired. Seeing that these form the conclusion of the part, which was not issued before the middle of June, it is not easy to account for the omission of the three new species of *Pandanus* published by Mr. Rendle in this Journal for Nov. 1894, or of his three new Lagarosiphons which appeared in the Linnean Society's *Journal* issued at the beginning of February last. As only one species of *Pandanus* and two of *Lagarosiphon* are named in Prof. Engler's work, it is manifest that the enumeration is by no means complete. The proofs seem to have been carelessly read—we note Podocarpus "milan*g*iana" and Potamogeton "luce*r*s" (*P. crispus* must be added to the list, as Mr. Bennett has shown*): and although Prof. Engler may think it desirable to transfer *Widdringtonia Whytei* to *Callitris*, he is not entitled to cite it as "Callitris Whytei Rendle."

The Botanical Department of the British Museum has recently acquired an interesting transcript of Sir Joseph Banks's Journal of his voyage to Newfoundland and Labrador (April 7–Nov. 17, 1766), made by his sister, Sarah Sophia Banks, in 1772. The original MS. is not known to exist, but the list of plants referred to in the transcript is in the Botanical Department.

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* *Journ. Bot.* 1895, 137.

ALEXANDER GOODMAN MORE.

Mr. H. C. Hart having been prevented by illness from undertaking the biography of Mr. A. G. More which he had kindly offered to prepare for this Journal, it seems desirable not to delay further some account of one who for many years held a foremost rank among British critical botanists. Mr. R. M. Barrington published in the *Irish Naturalist* for May an interesting account of the deceased botanist, to which we are indebted for much information; the account of Mr. More's earlier years is entirely from this source.

Alexander Goodman More, who was of Scottish descent on both sides, was born in London, September 5th, 1830. From his sixth to his eleventh year he lived with his parents at Lausanne, and at this early age the direction of his tastes was shown by the collection of butterflies. In 1841 he went to school at Clifton, and subsequently to Rugby, where his natural history tastes further developed: a note in his diary for 1846 runs, "Taste for birds first began from being anxious to know all about a nuthatch I had shot, which I compared with and found out in Bewick." In 1850 he went with a friend to Ireland, where he spent the summer and botanized for the first time. In the same year he entered Trinity

College, Cambridge. The summer of 1851 was also spent in Ireland, at Castle Taylor, Co. Galway (where some years later his sister discovered *Neotinea intacta*), and *Viola stagnina* was added to the Irish flora. At Cambridge he made the acquaintance of Professor Babington, and in 1852 began to study botany seriously, having purchased a number of books dealing with the English and Continental floras. He was prevented by ill-health from completing his college course, and enforced leisure enabled him to spend portions of 1854 and 1855 in Ireland. The results of his earlier investigations appeared in his first published paper, "On the Flora of the Neighbourhood of Castle Taylor," which was read at the Botanical Society of Edinburgh (of which he was a Fellow) on April 12th, 1855, and printed in its *Proceedings*, pp. 26–30. It was "offered as a small contribution towards what has hitherto been so little explored—the geographical statistics of West of Ireland Botany;" and may be taken as an indication of the bent of his tastes, and as a first step in the direction which led to the publication of the *Cybele Hibernica*. In 1856 More became a Fellow of the Linnean Society. Side by side with his botanical work, he kept up the study of birds and butterflies, of which his knowledge was considerable: his knowledge of these branches of natural history, however, demands only a passing reference in these pages.

More's critical knowledge began to display itself in papers on *Viola*, *Batrachium*, and *Lepigonum*, contributed to the new series of the *Phytologist* in 1860 and 1861; some of these were unsigned, but the bibliography appended to Mr. Barrington's sketch enables us to identify them. It was in the *Phytologist* also that he printed his Comparative List of British Plants, compiled from the leading floras, which was subsequently published separately. He published a note on the climate of the Isle of Wight (where he was then residing) in the first volume of this Journal (1864), to which he has always been a warm friend and valued contributor, and in which most of his botanical papers have been published. These have related for the most part to the Irish flora, and have been marked by that critical accuracy which was never absent from his observations.

His chief work was, of course, the *Cybele Hibernica*, which he suggested to Dr. David Moore in 1864. The suggestion was received with favour, and as Dr. Moore had already collected a large amount of material, Mr. More went to live at Glasnevin, and the two botanists devoted themselves to the scheme with such energy that the volume was published in 1866. The value of the work is so universally recognized that it is unnecessary to say more than that More's critical faculty is manifest on every page; and this is no disparagement to his collaborator, without whose extensive knowledge of the country the necessary material would not have been forthcoming. The work has long been out of print, and for many years past, up to his death, More was accumulating material for a new edition. It is to be hoped that Irish botanists will, with as little delay as possible, devote themselves to publishing this fitting memorial to one of Ireland's principal botanists.

In 1867 More was appointed Assistant in the Dublin Natural

History Museum, and in 1881 succeeded Dr. Carte as Curator. In 1887, as we recorded at the time, he was obliged by failing health, which had in many other ways interfered with his work, to retire from this post. From then until his death (which occurred at Dublin on March 22nd) he continued to keep up an extensive correspondence with botanists and other naturalists, although no communication from him has appeared in these pages since 1893, when he corrected for republication the interesting "Sketch of Irish Botany" which he had contributed to a local Guide.

Every one who knew him, and especially the younger generation of Irish botanists, to whom he was "guide, philosopher, and friend," found in More a ready helper and a sympathetic adviser. Mr. Barrington, who appends to his sketch an excellent bibliography of More's scientific writings, says truly that "he wrote less than he knew, rather than err by making unfounded statements"; and he was always more anxious to encourage others to write than to do so himself. We cannot do better than end this brief notice by reprinting the paragraph with which Mr. Barrington concludes his sketch:—

"The errors which he corrected and saved others from making are scarcely less numerous than those many additions to the Irish flora and fauna which are solely due to his activity. After the scientific exploration of any district, More was the traveller's first confidant, and the delight with which he hailed a discovery gave a zest and enjoyment to field work which will be sadly missed in Ireland. What areas deserved attention—who had been there previously, and what had been done and left undone—were at his fingers' ends. He suggested many expeditions, checked others, and was consulted in the arrangement of all. Nobody can hope to fill his place; no one is equally familiar with birds, mammals, fishes, reptiles, flowering plants, and ferns, a versatility which was happily combined with a sound judgment, great tact, and a suavity and gentleness of manner peculiarly attractive. His ability was perhaps best testified by the regard which was entertained for him by every one. He has left a blank which can never be filled, and which will be more vividly realized every day by those who had the privilege of his friendship."

REVISION OF THE AFRICAN SPECIES OF ERIOSEMA.

By Edmund G. Baker, F.L.S.

(Concluded from p. 148.)

C. Caules erecti vel suberecti copiose ramosi. Rami dense griseo-pubescentes. Folia trifoliolata. Flores dense capitato-congesti. Bracteæ persistentes, $\frac{3}{8}$–$\frac{1}{2}$ poll. longæ.

24. E. griseum Baker in *Fl. Trop. Afr.* ii. 228.

Hab. Aboh and lofty hills of the Yomba Country, *Barter*! Angola, Distr. Golungo Alto, *Welwitsch*, No. 4106! Distr. Zenza do Golungo, *Welwitsch*, No. 4104! Distr. Ambaca, *Welwitsch*, No. 4105! Bongo-land, near Gir, *Schweinfurth*, Nos. 1386, 1388!

A copiously-branched shrub, densely clothed with grey pubescence. Root thick, woody.

D. Caules erecti vel suberecti ramosi. Rami ferrugineo-pubescentes. Folia trifoliolata. Flores dense capitato-congesti. Bracteæ iis E. grisei minores.

25. E. GLOMERATUM Hook. f. *Fl. Nigr.* 313; Baker, *l. c.* *Glycine rufa* Schum. et Thonn. *Pl. Guin.* 344. *Rhynchosia glomerata* Guill. & Perr. *Fl. Seneg.* 216. *E. rufum* Baill. in *Adans.* vi. 226. *E. gracile* Klotzsch in Peters, *Mossamb. Bot.* 35.

Hab. Senegambia, *Heudelot*, Nos. 682! 758! 752! Gaboon, *Soyaux*, No. 402! *Mann*, No. 1005! Sierra Leone, *Afzelius*! *Smeathman*! Near Mahela, *Scott Elliot*, No. 3948! Cape Coast, *Brass*! Niger, *Barter*! *Vogel*! Congo, *Hens*, Nos. 33 & 277! Congo, below Stanley Pool, *H. H. Johnston*! Congo, *Chr. Smith*! *Consul Burton*! Monbuttu Land, *Schweinfurth*, No. 3414! Angola, Distr. Congo, *Welwitsch*, No. 4109! Distr. Golungo Alto, *Welwitsch*, Nos. 4107! 4108! Zanzibar, *Dr. Kirk*! *Hildebrandt*, No. 934!

Var. β. ELONGATUM Baill. in *Adans.* vi. 227 (ad not.).

Hab. Senegambia, *Heudelot*!

Var. γ. ALBIDUM. *Rhynchosia glomerata* Guill. & Perr. var. *albida* Guill. & Perr. *Fl. Seneg.* 216. Foliis pube sericea albida utrinque onustis.

Hab. Senegal, *Perrotet*, No. 214! Herb. Mus. Brit.

26. E. SERICEUM Baker *l. c.* 226.

Hab. Niger Country; Angiama, *Barter*!

E. sericeum of Ecklon & Zeyher's *Enumeration*, 256, must, I think, be referred to *Rhynchosia Orthodanum* Benth.

E. Caulis erectus virgatus. Folia 3–5-foliolata. Foliola angustissima latitudine sua 20–30ies longiora. Flores sparsim racemosi parvi.

27. **E. linifolium**, n. sp. Caulis erectus virgatus subligneus inferne teres superne paullo angulatus, foliis 3–5-foliolatis, foliolis longissimis anguste lanceolatis quam latitudine sua 20–30ies longioribus, ad extremitates attenuatis coriaceis discoloribus superne viridibus lævibus subtus albo-pubescentibus, petiolis petiolulisque brevissimis, floribus racemosis depressis vel subdepressis, racemis terminalibus laxifloris, calyce externe flavo-virido-pubescente, sepalis triangularibus acutis vel acuminatis duobus superioribus brevioribus, leguminibus irregulariter obovatis.

Hab. Niamniam Land, Bendo, *Schweinfurth*, No. 3888! Bongo Land, Gir, *Schweinfurth*, No. 2161! Djurland, *Schweinfurth*, No. 1976!

Stem erect, virgate, subligneous, terete below, somewhat angled above, 1–3 ft. high. Leaves 3–5-foliolate; leaflets very long, 5–7 in. by $\frac{1}{5}$–$\frac{1}{3}$ in. broad, narrow lanceolate-acuminate, and also tapering to the base, coriaceous, smooth and green above, whitish pubescent below. Petiole and petiolules very short. Stipules lanceolate, acuminate, nearly ½ in. long. Raceme terminal, lax-flowered, 2–6 in. long; flowers rather depressed. Calyx covered externally with yellowish green pubescence; sepals triangular, acute or acuminate, 2 upper sepals shorter than the others. Petals ¼ in. long.

F. Caules brevissimi. Radix lignosa. Folia trifoliolata. Pedunculi vel erecto-patentes axillares flores binos gerentes vel flores solitarios gerentes.

28. E. PYGMÆUM Welw. MS. ex Oliv. *Fl. Trop. Afr.* ii. 225.

Hab. Angola, Highlands of Huilla, nr. Mumpulla, alt. 4000 ft, *Welwitsch*, No. 4123!

A perennial with very short stems and cinereous grey foliage. "Flowers yellowish, with a purple keel."

29. **E. Elliotii**, n. sp. Perenne nanum, caules brevissimi tenues et pubescentes adscendentes, foliis trifoliolatis, foliolis parvis subcoriaceis oblongis vel anguste obovatis basi cuneatis adultioribus superne glabris vel glabriusculis subtus pubescentibus, petiolis petiolulisque brevissimis, stipulis persistentibus scariosis ovatis venosis, floribus solitariis vel subsolitariis, pedunculis pubescentibus brevissimis, calycis externe pubescentis laciniis lanceolatis acuminatis quam petalis brevioribus, vexillo externe pubescente, ovario hirsuto, legumine applanato externe pubescente.

Hab. Nile Region; Nandi, dry bare places, alt. 6000–7000 ft.; in flower in January, *Scott Elliot*, No. 6901!

A dwarf perennial with very short ascending stems. Leaves small, subcoriaceous, trifoliolate, oblong or narrow obovate; terminal leaflet often about ½ in. long, larger than the lateral leaflets, which are slightly unequal-sided; young leaves and under sides of older leaves covered with grey hairs. Stipules ovate, scarious, strongly veined, 2 lines long. Flowers axillary, solitary or subsolitary, on very short peduncles. Calyx externally covered with grey hairs; sepals lanceolate, acuminate, shorter than the petals. Standard pubescent externally. Legume flat, about ¾ in. long and ⅓ in. broad, pubescent externally, 2-seeded. Seeds brown, smooth.

This plant was collected by Mr. G. F. Scott Elliot on the Ruwenzori Expedition. It is apparently quite distinct from any of the already described species. I have named it in honour of the discoverer.

G. Caules decumbentes adscendentes vel suberecti 3–6 poll. longi. Folia trifoliolata. Radix mihi ignota. Flores racemosi parvi vel parviusculi.

30. **E. Welwitschii** Hiern MS. in Herb. Mus. Brit. Herba pumila, caulibus decumbentibus ascendentibus vel suberectis breviter et molliter pubescentibus, foliis trifoliolatis foliolis ellipticis ad extremitates rotundatis et ad apicem sæpe mucronulatis puberulis, foliolis terminalibus quam lateralibus parce majoribus, pedunculis axillaribus circiter 6-floribus, floribus patenti-depressis, pedicellis brevibus, calycis externe pubescentis oblique campanulati dentibus

lanceolatis, corolla fere glabra, ovario dense hirsuto 2-ovulato, legumine applanato pubescente 2-spermo.

Hab. Not uncommon in sandy sparsely grassy places by the banks of the rivulet Pampa, near Ambaca, Angola; in flower and fruit in October, 1856, *Welwitsch*, No. 4121!

A dwarf herb, 3–6 in. high, perennial; stems decumbent, ascending or suberect, tough, at times a little woody, tawny, softly and shortly pubescent, branched. Leaves trifoliolate; common petiole $\frac{1}{6}$–$\frac{3}{8}$ in. long, pubescent; leaflets elliptical, rounded at both ends or slightly excavated at the base, often mucronulate at the tip, $\frac{3}{5}$–$1\frac{1}{2}$ in. long, $\frac{1}{4}$–$\frac{5}{8}$ in. wide, puberulous, the terminal leaflet rather larger than the lateral ones; terminal petiolules $\frac{1}{8}$–$\frac{1}{5}$ in. long, lateral ones very short. Stipules lanceolate, parallel-nerved, pubescent, $\frac{1}{5}$–$\frac{1}{4}$ in. long. Inflorescence axillary, about 6-flowered, rather dense; peduncle pubescent, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. Flowers $\frac{3}{8}$ in. long, patent-nodding, of a deep yellow colour; pedicels short. Calyx pubescent outside, glabrous inside, obliquely campanulate, 5-cleft; lobes lanceolate or somewhat subulate. Corolla nearly glabrous. Ovary densely hairy; ovules 2. Fruit compressed, $\frac{3}{4}$ in. long, $\frac{3}{8}$ in. broad, pubescent; seeds 2, $\frac{1}{5}$ in. long, $\frac{1}{10}$ in. broad.

Allied to *Eriosema procumbens* Benth. (*Cytisus procumbens* Bojer), from Madagascar.

H. Caulis volubilis dense griseo-pubescens. Folia ternato-pinnatifida. Flores 4–8 in racemum capitatum et longe pedunculatum dispositi. Petala 3–4 lin. longa.

31. E. RHYNCHOSIOIDES Baker in *Journ. Linn. Soc.* xv. 94.

Hab. Near Lake Tanganyika, *Cameron*!

This plant has the habit of a *Rhynchosia*, but the seeds are attached at the extremity of the hilum.

I. Caules (sæpe herbacei) prostrati vel adscendentes rarius erecti. Folia simplicia vel trifoliolata. †Radices tubera napiformia vel fusiformia producentes. Inflorescentia varia. Flores parvi vel parviusculi.

* Folia simplicia.

32. E. CORDIFOLIUM Hochst. ex Richard, *Tent. Fl. Abyss.* i. 227; Baker, *l. c.* 224; Engler, *Hochgebirgsflora*, 272.

Hab. Abyssinia, Amba Sea, *Schimper* (1862), No. 451! Dscherladscheranne, *Schimper*, iii. No. 1601. Gafta, *Schimper*, ii. No. 1220. Dschanda, in Amhara, *Steudner*, No. 132.

Tigre name, "Ras Golla."

The stem is herbaceous and flexuous. Leaves simple ovate or ovate-lanceolate. The tuber is edible.

E. cordifolium Benth. in *Linnæa*, xxii. 521, from Brazil, was published two years later than the above; it is apparently the same as *E. Benthamianum* Mart.

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† I have placed *E. psilophlebarum* Welw. in this group on account of its evident affinity with *E. tuberosum*, but our specimens do not show whether the root bears filipendulous tubers or not.

33. **E. Schweinfurthii**, n. sp. Caulis herbaceus erectus e radice tuberosa ortus, tubere ovoideo in collum angustato, foliis simplicibus angusti-lanceolatis coriaceis quam latitudine sua 8–16ies longioribus discoloribus apice apiculatis superne lævibus subtus griseo-canescentibus, stipulis lanceolatis oppositifoliis, floribus dense vel subdense racemosis, pedunculis quam foliis multo brevioribus griseo-pubescentibus 4–12-floris, calyce oblique campanulato griseo-hirsuto, sepalis lanceolatis acuminatis, vexillo obovato emarginato, vexillo carinaque externe pubescentibus, legumine mihi ignoto.

Hab. Djur-land, Grosse Seriba Ghattas, *Schweinfurth*, Nos. 2308, 1797!

A very marked species, easily recognisable amongst its allies by the very long narrow lanceolate subsessile leaves.

Stem erect, herbaceous, 3–4 in. high, slightly channelled, springing from a tuberous root. Tuber woody, ovoid at the base, narrowing upwards into a neck slightly over 2 in. long, $\frac{3}{4}$ in. broad at the broadest part. Leaves simple, coriaceous, subsessile, narrow-lanceolate, 4–6 in. long, $\frac{3}{8}$–$\frac{1}{2}$ in. broad, thus 8–16 times longer than broad, apex apiculate, smooth above, grey canescent below; main vein prominent below; lateral veins subprominent, forming together with smaller veins a fine reticulation. Stipules lanceolate, leaf opposed, 6–7 lines long. Flowers closely racemose, patent or slightly erecto-patent at ends of peduncles, which are $\frac{1}{2}$–$\frac{3}{4}$ in. long; peduncles grey pubescent, 4- to about 12-flowered. Petals about $\frac{3}{8}$ in. long. Calyx obliquely campanulate, externally covered with grey hairs.

I have named this species in honour of Dr. Schweinfurth, the collector of several of the striking novelties described in this paper.

34. **E. cyclophyllum** Welw. MS., n. sp. Herba radice tuberosa filipendula pluricipite, caulibus flexuosis subcæspitosis angulatis pubescentibus pilosis prostrato-adscendentibus, foliis orbicularibus subcoriaceis subsessilibus apice apiculatis basi cordatis utrinque pubescentibus, stipulis lanceolatis striatis, racemis axillaribus 6–10-floris, floribus subdepressis aurantiaco-purpurascentibus, calycis tubo campanulato externe pubescente dentibus triangularibus acutis quam tubo longioribus, leguminibus late oblongis rufo-villosis 2-spermis, spermis nigrescentibus.

Hab. In short, bushy, rather stony pastures about Lopollo, Distr. Huilla, Angola, but not at all common; in flower and fruit in December, 1859, *Welwitsch*, No. 4096!

A pubescent herb, about 6 in. high; rootstock branched, with napiform tubers suspended by wiry branches. Stems subcæspitose, prostrate-ascending, rather slender. Leaves simple orbicular, mucronate, deeply cordate at the base, chartaceous, sparingly pubescent or nearly glabrate above, pubescent at least on the veins beneath, 1–1$\frac{3}{4}$ in.; petiole $\frac{1}{10}$–$\frac{1}{6}$ in., pubescent. Stipules ovate, pubescent, parallel-nerved, $\frac{1}{4}$ in. long. Inflorescence axillary and subterminal; peduncles 1–1$\frac{1}{2}$ in. long, tawny-pubescent; racemes dense, spike-like, $\frac{1}{2}$–1 in. long. Flowers nodding, orange-purplish, $\frac{3}{8}$ in. long, subsessile. Calyx ventricose-campanulate, pubescent outside, glabrous inside, half as long as the flower, 5-cleft; the 2 upper lobes lanceolate, acute; the 3 lower lobes ovate, acute, rather shorter than the upper lobes. Standard hairy at the back. Ovary subsessile, 2-ovuled, densely hairy; style much curved about the middle. Fruit $\frac{1}{2}$ in. long, $\frac{1}{3}$ in. broad, pubescent; seeds 2, $\frac{1}{5}$ in. long by $\frac{1}{8}$ in. broad.

Nearly related to *Eriosema cordifolium* Hochst., an Abyssinian species.

35. **E. prunelloides** Welw. MS., n. sp. Radice tuberosa filipendula, caulibus procumbentibus vel adscendentibus versus apicem sericeo-pilosis, foliis simplicibus ovato-lanceolatis superne glabris vel fere glabris, subtus præcipue foliis superioribus plus minusve sericeo-pilosis, racemis axillaribus vel subterminalibus dense spicatis, floribus subsessilibus patentibus vel depressis, calycis externe sericei dentibus lanceolato-subulatis, ovario externe sericeo 2-ovulato, legumine 2-spermo.

Hab. In sandy thickets near Condo, Distr. Pungo Andongo, Angola; in flower and fruit in March, 1857, *Welwitsch*, No. 4100!

Root wiry, flexuous, leading down to a napiform tuber of $1\frac{2}{5}$ in. in length by $\frac{3}{5}$ in. in thickness; rootstock branched. Stem and branches wiry, firmly herbaceous, procumbent or ascending, attaining about a span in height, clothed towards the apex with white silky-pilose hairs. Leaves simple, ovate-lanceolate, obtuse, rounded or slightly hollowed at the base, scarcely or nearly acute at the apex, usually apiculate, chartaceous, glabrous or nearly so on the upper surface, more or less silky-pilose and glandular on the under surface, especially the upper leaves, 1–3 by $\frac{1}{2}$–1 in.; petiole $\frac{1}{8}$–$\frac{1}{5}$ in. long, more or less silky-pilose, sometimes with a pair of small glabrous subulate stipules near the apex. Stipules lanceolate, very acute, parallel-nerved, glabrous or nearly so, $\frac{1}{3}$–$\frac{2}{3}$ in. long, persistent. Racemes axillary and subterminal, densely spicate, $\frac{1}{2}$–$\frac{3}{4}$ in. long; peduncles more or less silky-pilose, $\frac{1}{3}$–$\frac{2}{3}$ in. long; flowers subsessile, patent or nodding, about $\frac{1}{4}$ in. long; bracteoles linear-subulate, about equalling the calyx. Calyx subequally 5-cleft, silky outside, glabrous inside, rather shorter than the glabrous corolla in flower, somewhat enlarged and burst in fruit, lobes lanceolate-subulate. Stamens glabrous. Ovary sessile, silky outside; ovules 2. Young fruit nearly $\frac{1}{2}$ in. long by $\frac{1}{3}$ in. broad; seeds 2.

Nearly related to *Eriosema cordifolium* Hochst., an Abyssinian species.

36. **E. gracillimum**, n. sp. Herba gracillima tenuiter pubescens, radice tuberosa filipendula, tuberibus ovoideis, caulibus ramosis prostrato-adscendentibus, foliis simplicibus subsessilibus ovalibus ad basin rotundatis chartaceis margine anguste revoluto, pedunculis gracilibus axillaribus et subterminalibus puberulis plerumque 2-floris, pedicellis brevissimis, calycis externe puberuli dentibus lanceolatis vel subulatis, ovario dense hirsuto, legumine applanato, 1–2 spermo.

Hab. In marshy meadows near Sansamanda, Distr. Pungo Andongo, Angola; in flower and fruit, May, 1857, *Welwitsch*, No. 4098!

Dr. Welwitsch's manuscript name for this plant was *Eriosema gracile*, but as Klotzsch has described a species with the same name, I have substituted *gracillimum*.

A slender slightly pubescent herb, 3–6 in. high, with the habit of *Lotononis;* root slender, but with an ovoid tuber of $\frac{1}{2}$–$\frac{2}{3}$ in. in length about the middle, 1–1$\frac{1}{2}$ in. below the surface of the ground. Stems branched, prostrate-ascending; branches curved, slender, rather lax. Leaves simple, subsessile, oval, rounded at the base, obtusely pointed at the apex, chartaceous, glabrescent, except the middle rib beneath, $\frac{1}{2}$–$\frac{5}{6}$ in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. broad, margin narrowly revolute; petiole very short. Stipules lanceolate, parallel-nerved, $\frac{1}{12}$–$\frac{1}{10}$ in. long. Inflorescence axillary and subterminal, about 2-flowered; peduncles very slender, puberulous, $\frac{1}{3}$–1$\frac{1}{3}$ in. long; flowers near together or solitary, $\frac{1}{6}$ in. long; pedicels, when present, very short. Calyx slightly puberulous, $\frac{1}{10}$ in. long; lobes 5, lanceolate or somewhat subulate, about equalling the tube. Corolla nearly glabrous. Ovary densely hairy. Fruit compressed, $\frac{3}{8}$ in. long, $\frac{1}{4}$ in. broad, 2–1-seeded; seeds $\frac{1}{8}$ in. long, $\frac{1}{10}$ in. broad, somewhat hairy.

Nearly related to *Eriosema cordifolium* Hochst., an Abyssinian species.

** Folia plerumque trifoliolata.

37. E. TUBEROSUM Hochst. in Schimp. *Fl. Abyss.* No. 1624; Baker, *l. c.* 224; Engler, *Hochgebirgsflora*, 272.

Hab. Abyssinia, near Gafta, *Schimper*, ii. No. 1202! Dscheladscheranne, *Schimper*, iii. No. 1624. Gundwa, *Steudner*, No. 101.

Leaves discolorous above, smooth below, grey-pubescent.

38. **E. psiloblepharum** Welw. MS., n. sp. Caules erecti vel adscendentes albo-pilosi, radice an tuberosa?, foliis plerumque trifoliolatis brevissime petiolatis, foliolis terminalibus ellipticis ad extremitates angustatis præcipue subtus albo-pilosis quam foliolis lateralibus parce majoribus, inflorescentia terminali spicato-capitata ovoidea leviter pedunculata, bracteolis lineari-subulatis, sepalis lineari-subulatis, corolla calyci subæquilonga, ovario dense hirsuto, leguminibus applanatis externe rufo-pilosis 1–2-spermis, seminibus ovalibus.

Hab. At Quitage, Distr. Pungo Andongo, Angola, in the rainy season; in late flower and fruit in March, 1857, *Welwitsch*, No. 4101!

Shaggy with long white slender hairs, 6–12 in. high, herbaceous as to the upper part, branched and somewhat woody towards the base; rootstock flexuous, woody-wiry. Stems erect or ascending, simple and shaggy as to the upper part. Leaves all or mostly trifoliolate, very shortly petioled, shaggy; terminal leaflet elliptical, narrowed at both ends, 2–3 in. long, $\frac{2}{3}$–1$\frac{1}{4}$ in. wide, shaggy, especially beneath, on a petiolule of $\frac{1}{4}$–$\frac{3}{8}$ in.; lateral leaflets rather smaller, somewhat oblique, subsessile. Stipules lanceolate-oblong, acute, sessile, parallel-nerved, $\frac{3}{4}$–1 in. long. Inflorescence terminal, spicate-capitate, ovoid, shaggy, about 1–1$\frac{1}{4}$ in. long, shortly peduncled; bracteoles linear-subulate, about $\frac{1}{3}$ in. long, nearly equalling the calyx. Calyx-segments reaching more than half-way down the calyx, linear-subulate, shaggy, nearly equal. Corolla about as long as the calyx. Ovary densely hairy, sessile; ovule solitary or ovules 2. Pods compressed, more or less shaggy with somewhat tawny hairs, $\frac{1}{2}$ in. long, $\frac{1}{3}$–$\frac{3}{8}$ in. broad. Seeds 2 or 1, compressed, oval, $\frac{1}{5}$ in. long, $\frac{1}{8}$ in. broad, dark brown, except the pale hilum towards one end.

Nearly related to *Eriosema tuberosum* Hochst., an Abyssinian species.

39. **E. leucanthum** Welw. MS., n. sp. Herba tomentoso-pubescens, radice tuberosa tuberibus napiformibus, caulibus erectis superne ramosis, foliis plerumque trifoliolatis, foliolis anguste ovali-oblongis ad apicem mucronulatis utrinque tomentosis subtus subsericeis, pedunculis axillaribus circiter 6-floris, pedicellis brevissimis, floribus depressis, calyce profunde 5-lobato, sepalis lanceolatis acuminatis, vexillo externe pubescente, ovario 2-ovulato, legumine oblongi-orbiculari 2-spermo piloso.

Hab. In hilly, almost bushy places near Lopollo, Distr. Huilla, Angola; in flower and fruit, December, 1859, *Welwitsch*, No. 4099!

A tomentose-pubescent herb, more or less tawny above, about 6 in. high (as represented in the specimens). Stems erect, branched above, several from the crown of the root (down to which there are indications of the older stems having been burnt), $\frac{1}{12}$ in. diam. Root somewhat woody, knotty, sinuous, leading down to a napiform tuber. Leaves mostly trifoliolate, crowded near the tops of the stem and branches; common petiole $\frac{1}{4}$–$\frac{3}{8}$ in. long; stipules lanceolate, parallel-nerved, tomentose-pubescent at the back, $\frac{1}{3}$–$\frac{3}{8}$ in. long; leaflets narrowly oval-oblong, rather obtusely pointed or rounded at the apex, mucronulate, obtuse at the base, tomentose on both sides, rather silvery beneath, $1\frac{1}{2}$–$2\frac{1}{2}$ by $\frac{1}{4}$–$\frac{1}{2}$ in. broad, the terminal larger than the lateral ones; terminal petiolule $\frac{1}{12}$–$\frac{1}{4}$ in. long, the lateral ones very short. Inflorescence axillary, dense, about 6-flowered. Flowers yellowish white, $\frac{2}{5}$ in. long, patent-nodding; common peduncle $\frac{1}{2}$–$1\frac{1}{4}$ in. long; pedicels very short. Calyx $\frac{1}{3}$ in. long, deeply 5-lobed, shaggy outside, glabrous inside; lobes lanceolate-acuminate. Petals all clawed; standard obovate, not appendaged, rather hairy at the back; wings narrow; keel curved, obtuse. Ovary subsessile, densely pilose, 2-ovuled; style elongate-filiform, curved in the middle, somewhat compressed-dilated below the capitate and thinly papillose stigma. Pod oblong-orbicular, $\frac{1}{2}$ in. long, $\frac{1}{3}$ in. broad, shaggy; seeds 2.

Nearly related to *E. salignum* E. Meyer, a plant which I have placed in group B, but which subsequent investigation may prove to belong to the present series.

40. **E. terniflorum** Hiern MS. in Herb. Mus. Brit. Herba caulibus prostratis vel adscendentibus ferrugineo-pubescentibus, radice filipendula tuberosa, tuberibus angustis elongatis fusiformibus, foliis trifoliolatis brevissime petiolatis, foliolis ovalibus vel ellipticis, lateralibus raro inæquilateralibus quam foliolis terminalibus minoribus, junioribus superne molliter pubescentibus subtus nervis prominentibus ferrugineo-pubescentibus, pedunculis quam foliis longioribus axillaribus ferrugineo-pubescentibus plerumque ad apicem 3-floris, pedicellis brevibus, calycis oblique

campanulati dentibus ovato-lanceolatis subacuminatis, vexillo externe pubescente, ovario dense hirsuto 2-ovulato.

Hab. In wooded thickets near Nene, Dist. Huilla, Angola; in flower in November, 1859, *Welwitsch*, No. 4122!

A ferruginous and pubescent herb, 6–8 in. high; rootstock knotty, branched, with elongated fusiform tubers. Stems subcæspitose, prostrate-ascending, rather slender. Leaves trifoliolate; common petiole $\frac{1}{8}$–$\frac{1}{6}$ in. long; stipules ovate, $\frac{1}{4}$ in. long, pubescent; leaflets oval, rounded or nearly so at both ends, chartaceous, softly pubescent and dull green on the upper surface when young, paler and marked with ferruginous pubescent veins on the lower surface, the terminal one $1\frac{1}{8}$–$1\frac{1}{2}$ by $\frac{7}{8}$–$1\frac{1}{8}$ in., the lateral ones $\frac{3}{4}$–$1\frac{1}{8}$ by $\frac{1}{2}$–$\frac{3}{4}$ in.; petiolule of the terminal leaflet $\frac{1}{5}$–$\frac{1}{4}$ in., of the lateral leaflets very short. Inflorescence axillary, mostly 3-flowered; flowers yellowish, $\frac{3}{8}$ in. long, mostly 3 near together on short pedicels at the extremity of the pubescent ferruginous peduncles of 2 in. more or less; occasionally 1 or 2 other flowers occur lower down on the peduncle; lateral flowers patent. Calyx $\frac{1}{3}$ in. long, pubescent on both sides, especially outside, obliquely campanulate, deeply 5-cleft; lobes ovate-lanceolate, somewhat acuminate. Standard pubescent outside. Ovary densely hairy; ovules 2.

Nearly related to *E. tuberosum* Hochst., an Abyssinian species.

41. **E. filipendulum** Welw. MS., n. sp. Herba radice filipendula tuberosa, caulibus prostratis adscendentibus vel erectis, foliis plerumque trifoliolatis ad basin interdum simplicibus, foliolis oblongis acutis subcoriaceis utrinque cinereo-hirsutis, foliolis lateralibus inæquilateralibus penninervatis, stipulis lanceolatis, floribus racemosis subdepressis, racemis quam foliis longioribus vel sublongioribus, calycis campanulati dentibus lanceolatis externe griseo-hirsutis, ovario piloso 2-ovulato, legumine juniore dense rufo-villoso.

Hab. In dry thickets near Lopollo, Distr. Huilla, Angola; in flower in December, 1859, *Welwitsch*, No. 4097!

A dwarf hoary hirsute herb, 2–4 in. high; rootstock woody-wiry, leading down to a napiform or fusiform tuber or tubers. Stems several from the crown of the root, prostrate-ascending or erect, not much branched above, shaggy with white hairs. Leaves mostly trifoliolate; common petiole shaggy, $\frac{1}{8}$–$\frac{1}{6}$ in. long; stipules lanceolate, parallel-nerved, hirsute at the back, $\frac{1}{3}$–$\frac{1}{2}$ in. long; leaflets narrowly elliptical, usually acute and apiculate at the apex, rather obtuse at the base, firmly chartaceous, hirsute beneath, sparingly so above, 1–2 in. long by $\frac{1}{3}$–$\frac{1}{2}$ in. broad, the lateral ones rather smaller; terminal petiolule $\frac{1}{6}$–$\frac{1}{4}$ in. long, shaggy; lateral ones very short. Inflorescence lateral, erect or at length arching, many-flowered, $\frac{1}{2}$–1 in. long; peduncles hirsute, 1–2 in. long; flowers whitish, dense, patent-nodding, subsessile, $\frac{3}{8}$ in. long. Bracteoles subulate, $\frac{1}{4}$ in. long. Calyx $\frac{1}{4}$ in. long, shaggy with white hairs outside, glabrous inside, rather deeply 5-lobed; lobes lanceolate, acutely acuminate. Standard rather hairy at the back. Ovary densely pilose, 2-ovuled.

Nearly related to *E. leucanthum* Welw., from which it differs by the longer hirsute hairs, the acute leaflets, and the more numerously flowered inflorescence.

The widely distributed *E. chinense* Vog., including *E. virgatum*, also belongs to this group.

J. Caulis erectus parce ramosus. Folia simplicia coriacea. Flores in racemos axillares et subsessiles dispositi. Petala 6–7 lin. longa.

42. E. ELLIPTICUM Welw. MS. ex *Fl. Trop. Afr.* ii. 227.
Hab. Highlands of Huilla, Angola, alt. 4000 ft., *Welwitsch*, No. 4102!

K. Caulis erectus. Rami dense griseo-pubescentes. Folia trifoliolata subcoriacea. Flores in racemos terminales dispositi. Bracteæ lanceolatæ. Petala $\frac{2}{3}$–$\frac{3}{4}$ poll. longa.

43. E. MUXIRIA Welw. MS. ex *Fl. Trop. Afr.* ii. 229. *Muxiria utilis* Welw. *Apont.* 573 (1859).
Hab. Angola, Distr. Pungo Andongo, *Welwitsch*, No. 4094!
Petals almost blue or violet variegated with yellow and purple.
Native name, "Muxiri" or "Mugiri."

L. Caules erecti ramosi. Folia trifoliolata. Flores speciosi vel subspeciosi $\frac{1}{2}$ ad fere 1 poll. longi. Bracteæ ovatæ vel ovato-acuminatæ vel lanceolatæ cuspidatæ $\frac{1}{4}$–$\frac{1}{2}$ poll. longæ.

* Corolla quam calyx paullo longior.

44. E. ROBUSTUM Baker *l. c.* 229; Engler, *Hochgebirgsflora*, 273.
Hab. Abyssinia, *Parkyns*! Amba Harres, *Schimper* (1863–8), Nos. 441! 807!

** Corolla quam calyx duplo longior.

45. E. FLEMINGIOIDES Baker *l. c.*; Oliver in Speke & Grant, *Bot.* t. 34.
Hab. Nile Land, Madi, *Speke & Grant*! Bongoland, Duggu, *Schweinfurth*, No. 57!
The plants collected by Dr. Welwitsch in Angola, Nos. 4111, 4112, and 4113, will probably have to be referred to the above species; and No. 4116, with narrower and smaller leaflets, may perhaps be a variety of the same.

⁂ Corolla quam calyx triplo longior.

46. E. SPECIOSUM Welw. MS. ex *Fl. Trop. Afr.* ii. 230.
Hab. Angola, Prov. Huilla, *Welwitsch*, No. 4103.

Plantæ mihi solum ex descriptionibus notæ.

47. E. INSIGNE O. Hoffm. in *Linnæa*, xliii. 128.
Hab. Angola, Malange.
"Ramis omnibus in racemos multifloros desinentibus." Corolla 1·2 cm.

48. E. PAUCIFLORUM Klotzsch in Peters, *Reise nach Mossamb.* i. 31; Baker *l. c.* 226.
Hab. Zambesi-land, Sena, *Dr. Peters*.

The peduncles are few-flowered, and several times longer than the leaves.

49. E. TRINERVE E. Mey. *Com.* 130; Harvey in *Fl. Capensis*, ii. 262.

Hab. Caffraria, *Drege.*

Plantæ exclusæ.

E. ambiguum Meissn. ex Krauss in *Flora*, xxvii. (1844), 357 = *Rhynchosia Ecklonei* Steud.

E. argenteum Desv. in *Ann. Sc. Nat.* ser. 1. ix. (1826), 422 = *Argyrolobium sericeum* E. & Z.

E. capitatum E. Mey. *Com. Pl. Afr. Austr.* i. 130 = *Psoralea tomentosa* Thunb.

E. chrysopostum E. Meyer ex Steud. *Nom.* ed. 2, i. 588 = *Rhynchosia chrysoposta* Steud.

E. erythrocarpon Beck in *Paulitsche Harar*, 455, t. 10 = *Flemingia rhodocarpa* Baker.

E. puberulum E. & Z. *Enum.* 256 = *Rhynchosia puberula* Steud.

E. reticulatum E. Mey. *Com.* 129 = *Rhynchosia Ecklonei* Steud. (fide *Index Kewensis*).

E. sericeum E. & Z. *Enum.* 256 = *Rhynchosia Orthodanum* Benth.

In this paper I have not attempted to deal with the Mascarene species, which are not numerous. Some of those of the mainland, like *E. glomeratum* and *E. cajanoides*, reach that island, while others, like *E. procumbens*, *E. Bojeri*, and *E. Bojerianum*, are apparently endemic.

In conclusion, I beg to tender my best thanks to Mr. W. P. Hiern, M.A., F.L.S., for kindly allowing me to use his descriptions of the Welwitschian novelties.

PLANTS OBSERVED IN THE OUTER HEBRIDES IN 1894.

By W. A. Shoolbred, M.R.C.S.

In a paper on the Flora of the Outer Hebrides which appeared in the *Annals of Scottish Natural History* for Jan. 1892, Mr. Arthur Bennett gave 492 species and varieties, excluding *Characeæ*, as the total number of plants recorded from these islands up to that time. He says, "To this I think it probable that at least fifty or sixty species will be added, and eventually found to occur." Since then several additional records have been made by Mr. A. Somerville and Mr. W. S. Duncan.

The material for these notes was collected during a visit of about three weeks in July, 1894. As I am able to add about forty more species, besides varieties and well-marked forms, and have been fortunate enough to confirm several old records previously considered doubtful, Mr. Bennett's estimate of the number likely to be added to the flora will, I think, prove to be under the mark, especially as a great deal of interesting ground remains to be searched.

North Uist, Benbecula, and the neighbourhood of Tarbert, in Harris, were the localities chiefly worked. A day was spent between Rodil and Obe, the greater part of it on Rueval, a hill which proved to be very unproductive, and a few hours in the island of Barra. While at Tarbert, I accompanied Mr. David McRitchie, a well-known Edinburgh archæologist, in an expedition to Taransay, where he wished to explore some underground houses and lake-dwellings. Unfortunately, in consequence of getting becalmed, when we at last reached the island we had only an hour or two for our various investigations.

The proprietor of N. Uist requested me not to visit the Lee Hills, on the south side of Loch Maddy, on account of their being a sanctuary for deer; some of their cliffs looked likely to be productive. Ben Eaval, the highest hill in the island, 1138 ft., is most difficult of access, and want of punctuality on the part of boatmen did not improve matters. The lower cliffs facing the remarkably wild and picturesque Loch Obisary are very interesting, and certainly deserve much more working than I was able to give them. A dense cloud which appeared generally to hang over the summit prevented anything much being done on the higher cliffs, which, however, seemed to be very bare, as are most of the hill-tops of Archæan gneiss in these islands, presenting few or no ledges where plants can grow.

The sand-dunes and sandy meadows, called "machars," on the west side of the islands, especially in Benbecula, have an interesting flora, and will probably yield more new records. The greater part of the north coast-line of N. Uist and the whole of the N.E. corner of it had to be left for a future occasion, chiefly on account of the distance from head-quarters.

Of course it was impossible to explore the banks and margins of more than a very few of the many narrow arms of the sea, several of which are gradually becoming transformed into fresh-water lakes; and more so as regards the innumerable fresh-water lochs, both large and small, few of which are at the same level, and which in N. Uist appear to cover as great an area as the land. These lochs are in every stage of change from a deep pool to a quaking dangerous bog and a firm level green-sward. All the small outlying islands require searching, but this can hardly be accomplished except by a resident. One small islet, covered with a thick deposit of guano, in Loch Maddy, not a quarter of an acre in extent, was the only locality in which I saw *Elymus arenarius* while looking for *Mertensia*, which I did not find.

My best thanks are due to Mr. Arthur Bennett, who has kindly gone through the whole collection, with the exception of Rubi and Hieracia, marking new records and determining doubtful specimens; to the Rev. W. Moyle Rogers, for examining the Rubi and Roses; to Mr. F. J. Hanbury, who has named most of the Hieracia, with the exception of two or three which he has reserved for further study; and to the Rev. E. S. Marshall and Mr. Beeby, for kind help with several critical plants.

A few forms still remain undetermined, and must be added in a supplementary note later on.

Mr. Arthur Bennett has published some of my records for v.-c. 110 in a paper on "Records of Scottish Plants for 1894" in the April number of the *Annals of Scottish Natural History.*

The botany of these islands being so little known, I have thought it best to catalogue *all* the species and varieties observed, adding after each the abbreviated names of the islands where found. Bar. = Barra; Ben. = Benbecula; H. = Harris; N.H. = North Harris; S.H. = South Harris; T. = Taransay; N.U. = North Uist. The usual asterisk denotes a new record, or confirmation of an old doubtful one.

Thalictrum alpinum L. Mountain and coast cliffs, N.H. & S.H. Nearly to sea-level in Luskentyre.—*T. dunense* Dum. Sand-dunes, Ben., N.U., T. — **T. sp.?* Sand-dunes, Ben., growing with *T. dunense.* Mr. Bennett writes: "Whether *collinum* Wallr. or *majus* Jacq. I cannot at present say. The pedicels are long for *collinum*, and *majus* is not named as possessing any glands."

Ranunculus Baudotii Godr. Shallow lochs by coast, W. side of Benbecula. — Var. *marinus* Fr.? Loch near coast, W. side of Benbecula.—*R. sceleratus* L. Plentiful on W. side of Benbecula. — *R. Flammula* L. Plentiful in all, and varying much. A curious dwarf form from 1½ to 4 in. high, with stem nearly simple, and one- or few-flowered, having ovate or ovate-lanceolate nearly sessile leaves, was found on dry moorland by the coast on the W. side of N. Uist. — **R. petiolaris* Marshall. Small lochs near Loch Maddy, N.U. Growing under similar conditions as at the Rannoch Muir station. —*R. acris* L. and *R. repens* L. Ben., N.U., H., T.

Caltha palustris L. Ben., N.U., H., T.

**Nymphæa lutea* L. In some plenty in several of the smaller lochs on the E. side of N.U. Confirms Macgillivray's report of 1831.

Castalia speciosa Salisb. Very plentiful in many of the shallower lochs in all the islands. The root is used by the islanders for making a brown dye.

Papaver dubium L. a. *Lamottei* (Bor.). Sandy fields, N.U., H., T.

Fumaria confusa Jord. Sandy fields, N.U., H., T.—*F. officinalis* L. Sandy fields, Benbecula.

Nasturtium officinale R. Br. Ben., N.U., T.

Cardamine pratensis L. Ben., N.U., H., T., Bar.—*C. hirsuta* L. Ben., N.U., T.—*C. flexuosa* With. Ben., N.U., H.

Cochlearia officinalis L. N. Uist. — *C. danica* L. N.U., H.— **C. grœnlandica* L. Plentiful on both the east and west coasts of Benbecula and N. Uist.

Sisymbrium officinale Scop. Apparently rare, and only as a casual. Near Loch Maddy, N. Uist; and Rodil, S. Harris.

Brassica Napus L. Borders of fields, Ben. & N.U. — **B. Rapa* L. var. *campestris* L. Road-sides and sandy fields near the coast, Ben. & N.U. — *B. Sinapistrum* Boiss. Ben., N.U., H. — *B. alba* Boiss. Benbecula; an escape.

Bursa pastoris Weber. All the islands.

Cakile maritima Scop. Ben. & T.

Raphanus Raphanistrum L. Ben., N.U., H.

Viola palustris L. Ben., N.U., H., T. — *V. Riviniana* Reich. Ben., N.U., H., T.—*V. tricolor* L. N.U.—*V. arvensis* Murr. Ben., N.U. — *V. lutea* Huds. Plentiful and very fine on the sand-dunes near Borve, Benbecula. Growing under similar conditions to the Miltown Malbay plant, which, as Mr. A. Bennett points out, it very much resembles.

Polygala vulgaris L. Ben., N.U., H., T.—*P. serpyllacea* Weihe. Same as *vulgaris*, but more plentiful.

Silene maritima With. N.U., T., and near Rodil, in S.H.

**Lychnis alba* Mill. In fair quantity in meadows near Balleloch, N.U. — *L. dioica* L. A few flowering pieces were seen which had been gathered on cliffs in S.H. — *L. Flos-cuculi* L. Common in Ben., N.U., & H.

Cerastium tetrandrum Curt. Sand-dunes, Ben. & T. — *C. glomeratum* Thuill. Ben., N.U., H. — *C. triviale* Link. Ben., N.U., H. —Var. *pentandrum* Syme. Near Loch Maddy, N.U.

Stellaria media Cyr. Ben., N.U., T., H., Bar. — Var. *major* Koch. Benbecula.—*S. uliginosa* Murr. Ben., N.U., H.

Arenaria serpyllifolia L. Ben., N.U., H., T. — *A. peploides* L. Ben., N.U., H., T.

Sagina maritima Don. Ben. & N.U. — *S. apetala* L. N.U., H., T. — *S. procumbens* L. Common in all. — *S. subulata* Presl. Locally abundant on exposed rocks, N.U.; Glen Lacusdale, N.H.; and in Taransay.—*S. nodosa* Fenzl. Sand-dunes, Ben. & Bar.

Buda marina Dum. Ben., N.U.—**B. media* Dum. Near Loch Maddy, and at Vallay Strand, N.U. — **B. rupestris* var. *glabrescens*. Not common, Ben. & N.U.

Montia fontana L., a. *repens* Pers. N.U. & H.—b. *rivularis* Pers. Harris.

Hypericum pulchrum L. Ben., N.U., H., T., Bar.

Linum catharticum L. Islands all.

Geranium molle L. Ben., N.U.

Erodium cicutarium L'Herit. Ben., N.U., T., Bar.

Oxalis Acetosella L. N.U., H., T.

Ilex Aquifolium L. Undoubtedly native on cliffs in S.H.

(*Acer Pseudo-platanus* L.) N.H. & S.H., planted. Apparently naturalised near Rodil, S.H. It has been planted in one or two places in N.U., but does not flourish.

Ulex europæus L. Native near Rodil, S.H. Near Tarbert, N.H., but apparently not native there.

(*Cytisus scoparius* Link.) Low cliffs near the manse, Tarbert, N.H.; undoubtedly originally planted.

Trifolium pratense L. In all the islands.—*T. medium* L. Near Tarbert, Harris.—*T. repens* L. All the islands.—*T. procumbens* L. Barra.

Anthyllis Vulneraria L. Ben., N.U., H., T. Of specimens from sand-dunes from W. side of N.U., Mr. A. Bennett writes: "Near var. *maritima* Schwing."

Lotus corniculatus L. Islands all.

Vicia Cracca L. Islands all. — *V. sepium* L. Ben., N.U., H.— *V. sativa* L. N.U.; field-borders.

Lathyrus pratensis L. Near Rodil, S.H.; and Taransay. Appears to be very rare.

Spiræa Ulmaria L. Islands all.

Rubus carpinifolius* W. & N. (?). Cliffs by loch near Scarilode, Benbecula. Mr. Rogers says: "Very probably *carpinifolius*, but too young to decide with certainty." — *R. pulcherrimus* Neum. N.U. & Bar.; with very finely developed panicles on sea-cliffs near Loch Maddy. Previously recorded under another name. — **R. villicaulis* var. *insularis* (F. Aresch.)? Cliffs at base of Rogneval, S. Harris. Mr. Rogers writes: "I think this is *R. villicaulis* var. *insularis*."—R. gratus* Focke. Plentiful near Obe, S. Harris. Mr. Rogers writes: "The first Scottish specimen of *R. gratus* I have seen or heard of."— **R. rusticanus* Merc. Near Castle Bay, Barra. —**R. mucronatus* Blox. N.U. & Ben.— **R. Radula* Weihe. Near Castle Bay, Barra. — **R. rosaceus* W. & N. f.? Barra. "Apparently a var. or form of *rosaceus*, but too young for determination."

Potentilla silvestris Neck. and *P. Anserina* L. Islands all.

Alchemilla vulgaris L. N.H. & S.H. — *A. alpina* L. Mountain cliffs, Clisham and Glen Lacusdale, N.H.

Rosa involuta Sm., b. *Sabini* (Woods). Non-flowering bushes apparently of this on cliffs, Ben Eaval, N.U.; and east side of Benbecula. — *R. tomentosa* Sm. H. & T. — *R. canina* L. A form between *lutetiana* and *dumalis* on sea-cliffs in an island in Loch Maddy.—Var. *dumalis* (Bechst.). Cliffs near Loch Maddy, N.U.— **R. glauca* Vill., b. *subcristata* Baker. Cliffs, S.H., near Tarbert; Barra.

Pyrus Aucuparia Ehrh. Ben., N.U., H. Usually a small stunted bush on cliffs.

Cratægus Oxyacantha L. Near Rodil, S.H. Probably not native.

Saxifraga oppositifolia L. Cliffs, Glen Lacusdale and Clisham, N.H.—*S. stellaria* L. Glen Lacusdale and Clisham, N.H.

Sedum roseum Scop. Ben Eaval, N. Uist. Cliffs, N.H. & S.H. At sea-level in Luskentyre. — *S. anglicum* Huds. Rocks and cliffs by the coast in all the islands. — *S. acre* L. Rocks, walls, and sand-banks, N.U. & Ben.

Drosera rotundifolia L. Ben., N.U., H., T. — *D. anglica* Huds. N.U., H., T.— × *rotundifolia*. Near Loch Maddy, N.U.

Hippuris vulgaris L. Ben. & N.U.

Myriophyllum spicatum L. Islands all. — *M. alternifolium* DC. N.U. & T.

Callitriche verna L. Ben.; in one small pool. — *C. stagnalis* Scop. Islands all.—*C. hamulata* Kuetz. Ben. & N.U.

Peplis Portula L. Only noticed in one spot in Benbecula.

**Epilobium angustifolium* L. Sea cliffs, south side of Loch Maddy, N.U. — *E. parviflorum* Schreb. Ben., N.U., H., T. — *E. montanum* L. and *E. obscurum* Schreb. Ben., N.U., H. — × *palustre*. Benbecula. — *E. palustre* L. Islands all. A peculiar, much-branched, narrow-leaved form was found on marshy ground close to the seashore on the west side of Benbecula, which Mr. Marshall says is new to him. — *E. anagallidifolium* Lam. Ben Eaval, N.U.; and Clisham, N. Harris.—*× *palustre*. Ben Eaval, N.U. Mr. Marshall tells me that this hybrid has previously only been found on Ben More of Assynt.

Hydrocotyle vulgaris L. Ben., N.U., H., T.

Eryngium maritimum L. Rare. Sand-dunes, Ben. & Bar.

Conium maculatum L. About crofters' cottages near Castle Bay, Barra.

Apium nodiflorum Reichb. fil. Ditches, N.U., Ben. — *A. inundatum* Reichb. fil. Shallow lochs and ditches, Ben., N.U., T.

Anthriscus sylvestris Hoffm. West side of N.U.

**Œnanthe Lachenalii* C. Gmel. Plentiful on marshy ground by some of the shallow lochs on the west coast of Benbecula. — *Œ. crocata* L. Ben., N.U., H., T.

Ligusticum scoticum L. N.U. & H.

Angelica sylvestris L. Islands all. Growing to an enormous size in some of the small bird-frequented islets.

Heracleum Sphondylium L. Ben., N.U., H., T.

Daucus Carota L. Islands all.

Caucalis Anthriscus Huds. Ben., N.U., Bar.

Hedera Helix L. Native on low inland cliffs between Rodil and Obe, S.H.; Ben. & N.U., planted.

Sambucus nigra L. Planted abundantly, and flourishing about Tarbert, Harris. Naturalized or native? near Rodil, S.H.

Lonicera Periclymenum L. Plentiful on coast and inland cliffs, Ben., N.U., H., Bar.

Galium verum L. Ben., N.U., H., T. A dwarf form is very plentiful on blown sand near the coast; on a hot day the air is quite sickly with its scent. — *G. saxatile* L. Islands all. — **G. sylvestre* Poll. Very sparingly, with *palustre*, on shore of narrow sea-loch near Loch Maddy, N. Uist. — *G. palustre* L. Islands all. —*Var. *Witheringii* (Sm.). N.U.— *G. Aparine* L. Ben., N.U., H. A dwarf form grows on the sandy coasts.

Valerianella olitoria Poll. Sandy meadows near Tigharri, N.U. —**V. dentata* Poll. Sparingly with the last.

Scabiosa Succisa L. Islands all.

Solidago Virgaurea L. Ben., N.U., H. — *Var. *angustifolia* Gaud. Rocky summit of Crogary More, N.U. — *Var. *cambrica* (Huds.). Cliffs, Glen Lacusdale, N.H.

Bellis perennis L. Islands all.

Aster Tripolium L. A curious dwarf form growing on wet sandy ground near Cragorry, Benbecula, which Mr. Bennett says he believes is var. *arcticum* Fr.

Antennaria dioica R. Br. N.U. & H.

Gnaphalium uliginosum L. Appears to be rare; only seen in one or two spots in Benbecula and Barra.—**G. sylvaticum* L. Ben. Meadow land on west side of the island.

Achillea Millefolium L. Ben., N.U., H., T. — *A. Ptarmica* L. Ben., N.U., T.

Anthemis Cotula L. Sandy meadows, west side of N.U.

Chrysanthemum segetum L. Ben., N.U., T. — *C. Leucanthemum* L. Ben., N.U.

Matricaria inodora L. Ben., N.U., H., T.

Tanacetum vulgare L. Ben. & N.U. Generally on tops of stone dykes and near cottages.

Artemisia vulgaris L. Ben., N.U., H., T.

Tussilago Farfara L. Barra.

**Petasites officinalis* Moench. Plentiful on sandy ground by ditches and road-sides about Tigharri and Balleloch, N.U. Recorded for v.-c. 110 by Balfour and Babington, but doubted by Watson in *Top. Bot.* What appeared at a distance to be this plant, from its immense foliage, was seen growing on a small island in a loch west of Castle Bray, Barra.

Senecio vulgaris L. Islands all. — *S. Jacobæa* L. Islands all. A form exactly like the Shetland one grows in N. Uist. — *S. aquaticus* Huds. Islands all.

Arctium minus Schk. Islands all.

Cnicus lanceolatus Willd., *C. palustris* Willd., and *C. arvensis* Hoffm. Islands all.

Saussurea alpina DC. In abundance on cliffs at head of Glen Lacusdale, and on Clisham, N.H.; also on Rogneval, S.H.

Centaurea nigra L. Ben., N.U., H., T.

Lapsana communis L. N.U., H.

Crepis virens L. Ben., N.U., H.

Hieracium Pilosella L. Seen only on sand-dunes in Taransay. — *H. anglicum* Fr. N.H. & S.H. — *Var. *longibracteatum* F. J. Hanb. Gilaval Glas, N.H.; Luskentyre, S.H. — *H. iricum* Fr. Coast and inland cliffs, Luskentyre, and cliffs near Tarbert, Harris. — **H. clovense* Linton, forma. Plentiful on cliffs at Ben Eaval, N.U., facing Loch Obisary.—**H. Schmidtii* Tausch. Cliffs, Gilaval Glas, and near Tarbert; N.H. & S.H.—*Var. *crinigerum* Fr. Rueval, Benbecula, and cliffs near Obe, S. Harris. A well-marked var. from Clisham, N.H. Of this Mr. Hanbury says: "A very similar form to what I found near Braemar." — **H. lasiophyllum* Koch. Gilaval Glas, N.H. — **H. caledonicum* F. J. Hanb. Cliffs, Gilaval Glas, N.H.; Beesdale, Luskentyre, S.H.; and near Castle Bay, Barra. — **H. rubicundum* F. J. Hanb. var. *Boswelli* (Linton). Clisham, N.H.; Beesdale, Luskentyre, S.H.; and sea-cliffs near Tarbert. — **H. Oreades* Fr. Abundant on cliffs on south side of Loch Maddy, N.U. — *H. argenteum* Fr. Clisham, N.H.; cliffs W. Tarbert Bay, S. Harris.— *H. scoticum* F. J. Hanb. Crogary More, N. Uist; Clisham, N.H.; inland cliffs, Barra. — **H. stenolepis* Lindeb. Cliffs, Ben Eaval, N.U. — *H. euprepes* F. J. Hanb., and **H. Orarium* Lindeb. Cliffs near Tarbert, S.H.— *H. vulgatum* Fr. Harris. — *H. sparsifolium* Lindeb. Cliffs, Cnoc-na-Cloiche, near Tarbert, S.H. — **H. strictum* Fr., var.? Cliffs, Ben Eaval, N.U. Too undeveloped for determination.

Hypochæris radicata L. Islands all.

Leontodon autumnalis L. Islands all; mostly the var. *pratensis* Koch.

Taraxacum officinale Web. Ben., N.U., H.—Var. *palustre* (DC.). N.U., T.

Sonchus oleraceus L. Ben., H. — *S. asper* Hoffm. Ben., N.U., H.—*S. arvensis* L. Ben., Bar.

Lobelia Dortmanna L. Plentiful in most fresh-water lochs in all the islands.

Campanula rotundifolia L. Ben., N.U., H., T. — *Var. *lancifolia* Mert. & Koch. Machars, near Balleloch, &c., N. Uist.—*Var. *speciosa* More. Sand-dunes near Borve, Benbecula. This well-marked variety grows in large crowded masses between the sand-hills, forming beautiful patches of colour, which make a striking contrast with the beds of *Viola lutea* which surround them. Mr. A. Bennett, who has kindly compared my specimens with More's type, writes: "As one would expect, much less luxuriant than the Irish specimens. The flowers of your specimens are as large as Mr. More's plant. Looking at the difference of climate in Boffin Island, Galway, and the Outer Hebrides (both of course damp), it seems to me that yours only differs from that cause." Sir J. D. Hooker, in Wallace's *Island Life*, ed. 2, 362, remarks: "Very well distinguished by its large flowers and small calyx-lobes, approaching the Swiss *C. Scheuchzeri*."

Vaccinium Myrtillus L. All the islands.

Calluna Erica DC. All the islands.

Erica Tetralix L. and *E. cinerea* L. All the islands.

Armeria maritima Willd. Ben., N.U., H., T.

Primula acaulis L. Ben., N.U., H., T.

Glaux maritima L. Ben., N.U.

Anagallis arvensis L. Machars on W. coast of N.U.—*A. tenella* L. N.U., Ben., H., T.

Centunculus minimus L. Shore of sea-loch near Loch Maddy, N.U.

Samolus Valerandi L. West coast of Ben. & N.U.

Fraxinus excelsior L. Near Rodil, S.H.; one or two small trees apparently "wild," but most probably seedlings from planted trees.

Erythræa Centaurium Pers. N.U. & T.; a dwarf subcapitate form.

Gentiana campestris L. Not very common. Ben., N.U., H., Bar. —**G. baltica* Murb. Plentiful in turf on low banks by the coast near Hacklett, east side of Ben.

Menyanthes trifoliata L. Ben., N.U., H., T.

Lycopsis arvensis L. Ben., N.U., S.H., T.

Myosotis cæspitosa F. Schultz. Ben., N.U., H., T., Bar.—*M. arvensis* Lam. Ben., N.U., T.

Lithospermum arvense L. Sandy fields west side of N.U.; and T.

Echium vulgare L. Sandy coast, Taransay.

Digitalis purpurea L. Ben., N.U., H.; nowhere abundant.

Veronica agrestis L. N.U. — **V. Tournefortii* C. Gmel. One stunted specimen seen near Rodil Lodge, S.H. — *V. arvensis* L. N.U., T.—*V. serpyllifolia* L. N.U., H.—*V. officinalis* L. N.U., H. —*V. Anagallis-aquatica* L. Ben., N.U., H.—*Var. *aquatica* Bosch. Ditches near coast, west side of Benbecula. — *V. Beccabunga* L. Only noticed in Barra.

Euphrasia officinalis L. All the islands. — *Var. *nemorosa* H. Mart. Glen Lacusdale, N.H. — *Var. *gracilis* Fr. Ben., N.U., H., T.

Bartsia Odontites Huds., *var. a. *verna* (Reichb.). Ben., N.U., H.—*Var. b. *serotina* (Reichb.). Ben., N.U.

Pedicularis palustris L. and *P. sylvatica* L. All the islands.

Rhinanthus Crista-galli L. All the islands. — *Var. *fallax* Wimm. & Grab. Near Loch Maddy, N.U.—*Var. *pubescens* Wallr. East coast of Benbecula.

Melampyrum pratense L., *var. *montanum* Johnst. Moorland at about 1000 ft. on Clisham, N.H.; a very curious dwarf form, the largest specimens barely 4 in. high.

**Utricularia neglecta* Lehm. Small loch near Loch Maddy, N.U. Not in flower, and at first mistaken for small *vulgaris*. It was sent to Mr. Bennett, along with specimens of *minor* from the same locality. He says: "I can have little doubt that this is *neglecta*: the habit is quite that plant, and not *vulgaris*; equally it is not *minor*."—*U. minor* L. Small lochs and ditches, N.U. & S.H., not flowering. Of some of the Harris specimens Mr. Bennett writes: "I am not at all satisfied with this as *U. minor*, yet it is very difficult to give it another name." — *U. intermedia* Hayne. Small lochs and ditches, N.U., H., T.

Pinguicula vulgaris L. All the islands. — *P. lusitanica* L. Ben. & N.U.

Mentha hirsuta Huds. Only seen in Barra on damp ground about two miles from Castle Bay.

Thymus Serpyllum Fr. N.U., H., T.—*T. Chamædrys* Fr. Benbecula.

Scutellaria galericulata L. Near Tarbert, Harris. — *S. minor* L. Stony shore of fresh-water loch, Benbecula. A form with broadly cordate lower leaves, and glandular calyx and corolla, which Mr. Bennett proposes should be named var. *glandulosa*.

Prunella vulgaris L. Islands all. — *Forma *alba*. N. Uist. A small form with white flowers and deeply dentate leaves.

Galeopsis Tetrahit L. Islands all.

Lamium amplexicaule L. Sandy fields, N.U. & T. — *L. intermedium* Fr. Sandy fields, Ben., N.U., T.—*L. purpureum* L. Ben., N.U., T.

Teucrium Scorodonia L. Apparently very rare; only seen on a bank near W. Tarbert Bay, N.H., and near Rodil, S.H.

Plantago major L. Ben., N.U., H. — *P. lanceolata* L. Ben., N.U., T.—*P. maritima* L. Ben., N.U., H., T.—*Var. *pumila* Kjell. Sea-cliffs near Scalpeg, N. Uist.—*P. Coronopus* L. Ben., N.U., T.

Littorella lacustris L. Common. Ben., N.U.

Chenopodium album L. Ben., N.U., T.

Atriplex patula L. Ben., N.U., Bar.—*A. hastata* L. f. N.U.—*A. Babingtonii* Woods. Sea-shore, Ben. & N.U. — *A. laciniata* L. Sandy coasts of Ben. & N.U.

Salicornia herbacea L. Muddy and sandy shores, Ben. & N.U.

**Suæda maritima* Dum. var. *procumbens* Syme. Sandy coast near Cragorry, Ben. — **Salsola Kali* L. Sparingly on sandy coast near Borve, Benbecula.

Polygonum Convolvulus L. As a weed of cultivation amongst crops on west side of N. Uist. — *P. aviculare* L. Islands all.—**P. Raii* Bab. Atlantic coast of Benbecula, growing just above high-tide mark, and finely developed. (Confirmation of old record.)—*P.*

Persicaria L. Ben., N.U., H. — *Var. b. *elatum* Gren. & Godr. Coast near Obe, S.H. — **P. lapathifolium* L. Ben., N.U. — *P. amphibium* L. Lochs. Ben. & Bar. — Var. *terrestre* Leers. Ben., N.U., H., T. Common on the dry sandy "Machars." — *P. viviparum* L. Clisham, N.H.; Luskentyre, S.H.

Oxyria digyna Hill. Glen Lacusdale and Clisham, N.H.

Rumex conglomeratus Murr. Ben., N.U., H. — *R. obtusifolius* L. Ben., N.U., H., T.—*R. crispus* L. Ben., N.U., H.—*R. Acetosa* L. and *R. Acetosella* L. Islands all.

Euphorbia Helioscopia L. Islands all.—**E. Peplus* L. A stray specimen seen near the quay at Castle Bay, Barra.

Urtica dioica L. and *U. urens* L. In all the islands, near houses or ruins.

Myrica Gale L. Ben., N.U., Bar. Appears to be very rare in N. Uist.

Betula verrucosa Ehrh. Rodil Glen, S.H.; planted.

Alnus glutinosa Medic. Stream-side, Rodil Glen, S.H.; doubtfully native.

Corylus Avellana L. Undoubtedly native on cliffs in N.H. & S.H.

Quercus Robur L. Old plantation, Rodil Glen, S.H.

Fagus sylvatica L. ,, ,, ,,

Salix alba L. and *S. viminalis* L. Tarbert, Harris; planted. —- *S. cinerea* L. and *S. aurita* L. Ben., N.U., H.—*S. repens* L. All the islands. The forms *parvifolia* (Sm.) and *argentea* (Sm.) frequently occur, especially in N.U. & H. On the shore of a loch near Stromban, N. Uist, two or more extreme forms were found, as well as every possible gradation between them; in fact, one or two rootstocks bore what appeared to be two separate forms.—*S. herbacea* L. Clisham, N.H.

Populus tremula L. Not uncommon in a dwarf stunted form on both coast and inland cliffs. Ben., N.U., H.

Empetrum nigrum L. Ben., N.U., H., T.

Juniperus communis L. Glen Lacusdale, N.H.; coast cliffs, S.H.; Barra. — Var. *intermedia* Nyman. Taransay. — *J. nana* Willd. Ben., N.U., S.H.; in great quantity on Rogneval, S.H.

Orchis incarnata L. Sandy meadows and roadsides, Ben., N.U., T.— *O. latifolia* L. Ben., N.U., S.H., T. Sometimes with, but generally in damper situations than, *incarnata*.—*O. maculata* L. All the islands.

Habenaria viridis R. Br. f. Machars near Tigharri, N.U. Mr. Bennett writes: "Labellum remarkable, the two outer lobes unusually long, and central tooth very conspicuous."

Iris Pseudacorus L. Plentiful in all.

Allium ursinum L. Plentiful on rocky ground at foot of Ben Eaval, N.U. Previously recorded for v.-c. 110 only from S. Uist by Mr. Somerville.

Scilla festalis Salisb. In small quantity on the lower cliffs of Ben Eaval, N.U.

Narthecium Ossifragum Huds. Islands all.

Juncus bufonius L. Islands all.—*J. squarrosus* L. Ben., N.U., H., T. — *J. Gerardi* Lois. Ben., N.U., H. — *J. balticus* Willd.

Sandy shore of shallow loch near Nunton, Benbecula. Found previously in the Long Island only by Balfour and Babington in 1841, "on sands of Barra, in Lewis."—*J. effusus* L. Ben., N.U., H. —*J. conglomeratus* L., *J. supinus* Moench., and *J. lamprocarpus* Ehrh. Ben., N.U., H., T.—*J. acutiflorus* Ehrh. Ben., N.U., H.

Luzula vernalis DC. N.U.—*L. maxima* DC. Ben Eaval, N.U., and Harris. — *L. campestris* DC. and *L. erecta* Desv. Ben., N.U., H.

Sparganium ramosum Huds. (agg.). Noticed in ditch on west side of N.U., while driving past.—*S. affine* Schnizl. Ben., N.U., H. Plentiful in many of the lochs, especially in Benbecula.

Lemna minor L. Ben. & N.U.

**Alisma ranunculoides* L. Shallow end of Loch Scalpeg, N. Uist.

Triglochin palustre L. and *T. maritimum* L. Ben., N.U., H.

Potamogeton natans L. and *P. polygonifolius* Pour. Ben., N.U., H. — *P. heterophyllus* Schreb. Loch west of Castle Bay, Barra.—*P. perfoliatus* L. Lochs, Benbecula and west of Castle Bay, Barra. —*P. filiformis* Nolte. Loch Stromore and other brackish water lochs, N.U.; fresh-water loch west of Castle Bay, Barra.

Ruppia maritima L. Brackish water at Vallay Strand, Loch Stromore, &c., N. Uist. Too immature to determine whether *spiralis* or *rostellata*.

**Zannichellia pedunculata* Reichb. Plentiful in ditches near the R. C. Church, Benbecula.

Zostera marina L. *var. *angustifolia* Fr. Loch Stromore, N.U.

Eleocharis palustris R. Br. Ben., N.U., T. — *E. uniglumis* Reichb. *var. *pumila* Bœnning. Margin of shallow sandy loch near Nunton, Benbecula. I am indebted to Mr. Bennett for this name; he says: "It is *S. uniglumis* Link, var. *pumila* Bœnninghausen."—*E. multicaulis* Sm. N.U. & H.

Scirpus pauciflorus Lightf. N.U. & H.—*S. cæspitosus* L. Ben., N.U., H., T. — *S. fluitans* L. N.U., H., T. — *S. setaceus* L. Glen Lacusdale, N.H. — *S. lacustris* L. Loch near Tarbert, S.H. — *S. Tabernæmontani* Gmel. Loch, west side of Benbecula. — *S. maritimus* L. Benbecula and Barra. — *Var. *compactus* Koch. Seashore, west side of Benbecula. — *S. rufus* Schrad. Plentiful by shallow sandy loch near Nunton, Benbecula.

Eriophorum vaginatum L. N. Uist. — *E. angustifolium* Roth. Ben., N.U., T.

Rhynchospora alba Vahl. N.U. & H.

Schœnus nigricans L. Common. Ben., N.U., H., T.

Carex dioica L. Near Tarbert, Harris.—*C. pulicaris* L. Islands all. — *C. arenaria* L. Ben., N.U., T., Bar. — **C. paniculata* L. Plentiful on marshy ground by one of the lochs on the west coast of Benbecula. — *C. echinata* Murr. Ben., N.U., H., T. — *C. ovalis* Good. Ben., N.U., H., Bar.—*C. rigida* Good. Clisham and Glen Lacusdale, &c., Harris. — *C. Goodenowii* J. Gay. Islands all.—*Var. *juncella* Fr. Near Loch Maddy, N.U.—f. *atra* Blytt. Loch-margin near Nunton, Benbecula.—*C. flacca* Schreb. Islands all.—**C. magellanica* L. Only one clump seen in a shallow loch in S. Harris, near Tarbert. — *C. pilulifera* L. N.U. & H. — *C. pallescens* L. N.U. & Bar. — *C. panicea* L., *C. binervis* Sm., and *C. fulva* Good. Islands all. — Var. *Hornschuchiana* Bab. Glen Lacusdale, N.H. — *C. flava* L. Islands all. — Var. *minor* Towns. N. Uist. — * × *fulva*. Glen Lacusdale, N.H. — **C. Œderi* Ehrh. Scalpeg, N.U.; loch-side near Nunton, Ben. — *C. rostrata* Stokes. N.U. & Ben. — *Var. *elatior* (Blytt). Between Loch Maddy and Clachanagluip, N.U.

**Phalaris arundinacea* L. Ditches and margins of lochs on west side of N. Uist.

Anthoxanthum odoratum L. Islands all.

Alopecurus geniculatus L. Islands all.—*A. pratensis* L. N.U. & H.

Agrostis canina L. Ben., N.U., H.—*A. palustris* Huds. Sandy coasts, Ben., N.U., Bar. — *A. vulgaris* With. Islands all. — Var. *pumila* (L.). Ben., N.U., H.

Ammophila arundinacea Hort. Sand-dunes, Ben., N.U., T.

**Aira caryophyllea* L. Bank near Loch Maddy, N.U.; Ben. & H. Confirming Macgillivray's 1831 record.—*A. præcox* L. Ben., N.U., H., T.

Deschampsia cæspitosa Beauv. Ben., N.U., H., T. — *Var. *pseudo-alpina* R. & S. Clisham, N.H. — *D. flexuosa* Trin. Ben., N.U., H.—*Var. *montana* Huds. Clisham, N.H.

Holcus mollis L. Ben., N.U., H.—*H. lanatus* L. Islands all.

Avena pubescens Huds. Stream-side, Taransay; only one or two specimens seen.—*A. strigosa* Schreb. Sand-dunes, Ben., N.U., H.

Arrhenantherum avenaceum Beauv. Ben., N.U., H., T.

Sieglingia decumbens Bernh. Ben., N.U., H., T.

Phragmites communis Trin. Ben., N.U., H., T.

Cynosurus cristatus L. Islands all.

Kœleria cristata Pers. Taransay.

Mollinia varia Schrank. Ben., N.U., H., T.

Catabrosa aquatica Beauv. *var. *littoralis* Parn. Sea-coast, west side of Benbecula.

Dactylis glomerata L. Ben., N.U.

Poa annua L. Islands all. — **P. nemoralis* L. Wall of hotel garden, Tarbert, N.H. — *P. pratensis* L. Ben., N.U., H. — Var. *subcærulea* (Sm.). Sand-dunes near Borve, Benbecula.—*P. trivialis* L. Ben. & N.U.

Glyceria fluitans R. Br. Ben., N.U., H., T.—*Var. *triticea* Fr. Marsh near Loch Maddy Hotel, N.U. — *G. maritima* Mert. & Koch. Coast, N.U.

Festuca rottbœllioides Kunth. Sand-dunes, Taransay. — **F. sciuroides* Roth. Rare. Wall-top, east side of N. Uist. Confirming *Top. Bot.* unauthenticated record. — *F. ovina* L. and *F. rubra* L. Ben., N.U., H.—Var. *fallax* Th. Ben. & N.U.—Var. *grandiflora*. Sand-dunes, Ben.

Bromus mollis L. Islands all.

Lolium perenne L. Islands all.

Agropyron repens Beauv. Ben., N.U., T. — **A. junceum* Beauv. Sandy Atlantic coasts of Ben. & N.U. ("*acutum*"?).

Nardus stricta L. Ben., N.U.

**Elymus arenarius* L. Seen only on a small islet in Loch Maddy, N.U. Confirms Macgillivray's 1831 record.

Hymenophyllum unilaterale Bory. Rather plentiful on cliffs in Beesdale, Luskentyre, S.H.

Pteris aquilina L. Islands all.

Lomaria Spicant Desv. Islands all.

Asplenium Adiantum-nigrum L. N.U., H., T. Specimens from Taransay, Mr. Bennett remarks, depart from the type in the direction of vars. *obtusum* and *Serpentinum*. — *A. marinum* L. N.U. & H. Rare, and not luxuriant.—*A. Trichomanes* L. Rather rare. Ben., N.U., H.

Athyrium Filix-fœmina Roth. Ben., N.U., H., T.

Scolopendrium vulgare Symons. Very rare. I was informed on trustworthy authority, in each case by the finder, of the occurrence of one or two plants of this in one spot in Benbecula, and also in S. Harris.

Cystopteris fragilis Bernh. Glen Lacusdale, N.H.

Lastræa Oreopteris Presl. and *L. Filix-mas* Presl. Ben., N.U., H.—*L. spinulosa* Presl. Ben., N.U.—*L. dilatata* Presl. Ben., N.U., H. — *L. æmula* Brackenridge. Ben. & N.U. Very abundant in N. Uist.

Polypodium vulgare L. Ben., N.U., H.

Phegopteris polypodioides Fée. Mountain cliffs, N.U. & H.

Osmunda regalis L. Ben., N.U., T.

Ophioglossum vulgatum L. Sea-shore, east side of N.U.

Botrychium Lunaria Sw. Benbecula.

Equisetum arvense L. and *E. palustre* L. Ben., N.U., H. — *E. limosum* Sm. N. Uist.

Lycopodium Selago L. N.U., N.H., S.H.

Selaginella selaginoides Gray. Ben., N.U., N.H., S.H.

Chara fragilis Desv. Stagnant peat-water, N.U., T. — Var. *delicatula* A. Br. Ditch near Sollas, N.U.—*C. aspera* Willd. Loch near coast, west of Castle Bay, Barra.

MR. SCOTT ELLIOT'S TROPICAL AFRICAN ORCHIDS.

By A. B. Rendle, M.A., F.L.S.

(Continued from p. 200.)

Angræcum Scottellii, sp. nov. Caulibus elongatis interdum ramosis, foliis linearibus apice valde inæqualibus; racemis axillaribus brevissimis; floribus parvis, sepalis ovatis acutis apice crasso reflexis quam petala lanceolata majoribus, labello trifido, segmento medio anguste triangulari, lateralibus longioribus supra basin angustam filiformibus et curvulis, calcare semipollicari tenui, ovario plus duplo longiore; columna brevi crassa apoda; polliniis 2 globosis stipite plano glandula squamiformi affixis.

Hab. Ruwenzori; head of Butagu Valley, 7000 ft., No. 8081; and woods, Butagu, 8000 ft., No. 8100, July (rains), 1894.

The long spreading shoots have the lowest of the scarcely thickened internodes bare, the upper ones covered with the leaf-sheaths or their remains. The distichous leaves, which reach a length of 5½ in., are 2 lines broad, tapering slightly beneath the unequal tip. The flowers are borne on very reduced axillary shoots; only one flower was present in each case, sessile in the axil of a short blunt upper membranous triangular-ovate bract; a similar lower bract subtended the scar of probably a lower flower. The sepals are somewhat convex upwards, 3 lines long, the dorsal 1⅔, the lateral 1½ lines broad. The petals are 2½ lines by ¾ line. The lip measures 3 lines from the entrance to the long thin spur (which tapers very gradually to the tip, being ½ line broad at the middle, with the lower half more deeply coloured) to the tip of the acute central lobe; the broadly linear base becomes gradually wider upwards, and is about 1 line broad in the middle of its length; the larger narrow lateral lobes are flexuose and curving. The column is scarcely 1½ lines long, the stigma 1 line broad. The ovary is about 2½ lines long.

Allied to *A. bicaudatum* Lindl. (S. Africa) and *A. fimbriatum* Rendle (East Tropical Coast range), but distinguished byi ts more slender stem with narrower leaves and very reduced racemes, as well as by the undivided lateral lobes of the lip.

Angræcum Whitfieldii, sp. nov. Vaginis caulis extensi a radicibus crassis elongatis perforatis; racemis tenuibus multifloris; floribus parvis, sepalis ovatis acutis 3-nerviis, lateralibus cum basi asymmetrica antice productis, petalis lineari-lanceolatis acutis 3-nerviis, labello e basi quadrata trifurcato, lobo medio acute triangulari quam laterales vix filiformes paullo breviore, calcare ovarium cum pedicello brevi valde superante; pollinarii stipite plano simplici.

Hab. Sierra Leone, *Thos. Whitfield*, 1844 (Herb. Mus. Brit.).

The specimen consists of a portion of stem 6 in. long, bearing roots more than a line in diameter, the longest reaching 1½ ft. in length. The leaf-blades have all dropped from their broad plicate insertion (5 lines long) on the sheaths. The thin dense-flowered axillary racemes are 1½–1¾ in. long, the bracts shortly ovate and amplexicaul. The sepals are 1⅗ lines long by ⅔ line broad, the two lateral being prolonged anteriorly at the base over the slender forwardly-curving spur (3 lines long). The petals are 1½ lines by less than ½ line broad. The lip, which has no basal auricles, is 1⅔ lines long to the tip of the median lobe; the lateral lobes are 1 line long. The column, which bears 2 anterior wings above, is ½ line long. The ovary, with the short geniculate stalk, is 2 lines.

Near *A. armeniacum* Lindl., but distinguished by its smaller flowers, the absence of basal auricles on the proportionately shorter base of the lip, and the marked anteriorly produced base of the lateral sepals. Also near *A. tridactylites* Rolfe (in *Gard. Chron.* ser. 3, vol. iv. p. 34), which, however, has larger flowers, "4 lines in diameter," with a spur "5 lines long," and the basal part of the lip "oblong, with a pair of small marginal fleshy teeth at the base."

Angræcum verrucosum, sp. nov. Planta gracilis, caule basi ramoso, radicibus et vaginis verrucosis; racemis axillaribus bifloris folia ligulata superantibus, bracteis late ovatis; floribus delicatulis, sepalis e basi lanceolata longe caudatis, petalis subhastatis in caudas filiformes productis, labello orbiculari-ovato apice crassiusculo abrupte acuto, basi in calcar longum rectum continuato; columna brevi crassa superne bialata.

Hab. Mt. Milanji, Nyasa-land, *A. Whyte*, 1892.

About $\frac{3}{4}$ ft. high, with ascending slightly zigzagged branches. Leaves distichous, with slightly bifid unequal tips; 2–$2\frac{1}{2}$ in. long by $2\frac{1}{4}$–$2\frac{1}{2}$ lines broad. The very slender rachis of the raceme perforates the leaf-sheath, and bears 2 sheathing bracts at the base, and in its upper third 2 blunt chestnut-brown bracts 2–$2\frac{1}{2}$ lines long, each subtending a slender-stalked flower. The spreading sepals are $13\frac{1}{2}$ lines long by $1\frac{3}{4}$ broad in the 7-nerved lower portion. The petals are 11 lines by $1\frac{1}{3}$ at the 5-nerved base. The lip measures 6 by 4 lines, and is marked with numerous thin dark parallel apically converging veins. It is directly continuous with the spur, which is 2 in. long. The column is 1 line long, and bears in its upper portion 2 wing-like projections which form a hood over the stigma. The somewhat flattened anther has 2 posterior pockets. No pollinia were present.

Evidently closely allied to the Mauritian *A. expansum* Thouars (*Orch. Afr.* t. 57), but a larger plant; the flowers of the former are moreover solitary, and the sepals and petals less tailed.

Listrostachys clavata, sp. nov. Caule elongato radices et folia ligulata vel e basi cuneata oblonga gerente; racemis brevibus axillaribus bifloris, bracteis parvis truncatis; floribus inter minores, sepalo dorsali ovato-lanceolato, subacuto, lateralibus petalisque lanceolatis, labello ascendente e basi valde concava carina mediana instructa, late acuminato; calcare sublongo supra medium subito clavato; columna brevissima crassa rotundata; pollinarii stipitibus ovalibus, glandula bifida.

Hab. Bafodeya Limba, Sierra Leone, April, 1891, No. 5555.

The stem is about 1 line thick; the leaf-sheaths are about half as long as the internodes ($\frac{3}{4}$ in.); the blades have a very unequal apex, and are about 3 in. long by 6–10 lines broad. The racemes perforate the leaf-sheaths, and are about 1 in. long; the broad truncate floral bracts 1 line. The stalk, with ovary, is $4\frac{1}{2}$–5 lines long. The sepals and petals are subacute, the former 7-nerved, the latter 5-nerved. The dorsal sepal is 4 lines long by $1\frac{1}{5}$ lines broad, the lateral $3\frac{3}{4}$ by $1\frac{3}{5}$ lines, the petals $3\frac{1}{2}$ by $1\frac{1}{3}$. The lower half of the lip is deeply concave, with a low median keel running up into the base of the upper acutely triangular half; the whole is 3 lines long, with a spur $5\frac{1}{2}$ lines. The thick column is scarcely 1 line long, and $1\frac{1}{2}$ lines broad; the sides are very thick and fleshy. The shortly pyriform pollinia are attached by oval stalks to a rather large gland, which is bifid above, and easily separable into 2 parts below the incision. The anther is medianly sulcate, and posteriorly 2-chambered.

A distinct species, especially characterized by its abruptly club-shaped spur.

Vanilla, sp. indeterminabilis.

Hab. Creeper in bush, Samburu, No. 6132.

Epipactis africana, sp. nov. Elata puberula inferne glabrescens, caule crasso; foliis inferioribus ovatis amplexicaulibus acutis cum venis prominentibus, superne in bracteas lanceolatas, flores subæquantes (vel vix) transeuntibus; racemo multifloro, alabastris a bracteis plus minus obtectis dense fusco-puberulis; floribus magnis, sepalo dorsali lanceolato acuto, lateralibus falcatis longe acuminatis, petalis ovato-lanceolatis valde acutis, labelli parte inferiori anguste scaphoidea lobis geminis lineari-oblongis basi instructa, lamina triangulari acuta undulato-crispa, disco carinata, staminodiis parvis angustis post stigma erectis.

Hab. In heather, Butagu, Ruwenzori, 8–10,000 ft., July (rains), 1894, No. 8005.

The specimens, which are broken off above the base, reach 1½–2½ ft. in length; the leaves and bracts are strongly nerved, the lower being 3 in. by 1½ at their broadest. The short pubescence becomes very dense in the upper part of the long bracteate raceme, the flower-stalks, ovaries, and buds being densely covered; on the bracts it is less evident. The ovary, with its slender curving stalk, is 14–15 lines long. The 3 (scarcely 5)-nerved dorsal sepal is recurved towards the tip, and is ¾ in. long by ¼ in. The sepals and petals are 5-nerved, the former 11 by 4 lines, the latter 8 by 2¼. The narrow boat-shaped lower half of the lip is 4½ lines long, its two basal lobes are 3⅓ lines by 1 line; the erect lamina is 4 by 2¾ lines, and bears a swollen rounded median keel on the lower two-thirds of its upper surface. The broad subquadrate stigma, bilobed below, is 1¼ lines across; the narrow staminodes project slightly on each side at its rear. The column is 1 line long, the large blunt anther 2 lines.

This species, the discovery of which extends the range of the genus into Tropical Africa, recalls *E. latifolia* All. in its leaf-characters, but is easily distinguished by its densely bracteate inflorescence and larger flowers, with sharp long-pointed sepals and petals. The very narrow basal portion of the lip also supplies a distinction.

(To be continued.)

SHORT NOTES.

Altitude of Ajuga pyramidalis in Scotland.—In this Journal for 1893 (p. 50) Mr. Arthur Bennett gives a number of altitudes at which this plant occurs, the lowest being in Caithness, "on the sloping banks (among grass) of one or two of the rivers, at a low elevation (70–100 ft.?)." Last year I sent a specimen to Mr. Bennett from Moidart, west coast of Inverness-shire, from an elevation of about 15 ft. above sea-level; this year I have found several plants in another place in the same district, half a mile or so from the first station, at about 20 ft. They grow on dry ledges of rocks facing west, and near a river. Mr. N. Colgan (*Journ. Bot.* 1892, p. 310) mentions having found this species in the Aran Isles, Ireland, at not more than 150 ft. above sea-level.—SYMERS M. MACVICAR.

FESTUCA HETEROPHYLLA IN SURREY.—The conditions under which this plant occurs at Witley have not been adequately described. The Rev. E. S. Marshall conducted me to the spot where it grows in 1889 or 1890, and since then I have seen no reason to change the opinion concerning its claims to be considered native which I expressed to Mr. Marshall at the time. The grass grows principally along the margin of a copse, under hazel-bushes, &c. The copse is an artificial one, at all events to a considerable extent, and contains exotic as well as native shrubs. This part of the copse is encircled by an ornamental walk which lies a few feet below the level of the copse, and it is along the top of the bank above the walk that the *Festuca* grows. About the walk are planted laurels, rhododendrons, &c., if my memory serves me, but I am not quite certain. Not many yards away is a brook, on the further side of which there is a tuft of *Cyperus longus*. When Mr. Marshall discovered this he considered it to be wild; I greatly doubted this, and he subsequently ascertained that it had been planted by a former owner of the property! There are several obvious ways in one or other of which the *Festuca* has probably been introduced: it may have been intentionally planted, like the *Cyperus*, by one interested in growing rare or curious plants; it may have been accidentally introduced with other herbaceous plants or with some of the imported shrubs. It is seldom that a plant, recorded as native, can be absolutely proved to be introduced, as in the case of the *Cyperus*; and there is just that *possibility* of wildness about the *Festuca* that is common to a good many plants that are wisely considered as introductions. And this, I think, is all that can be said for it.—W. H. BEEBY.

[Mr. Beeby's description of the Witley locality should be compared with Mr. Marshall's in *Journ. Bot.* 1889, 250. We do not propose to reopen the discussion as to the nativity of the *Festuca*, which was carried on at some length in this Journal for 1889 and 1890.—ED. JOURN. BOT.]

NOTICES OF BOOKS.

Traité élémentaire de botanique. Par LÉON GÉRARDIN. Paris: Baillière et Fils. 1895. 8vo, pp. 478; 535 figs. 6 fr.

WE congratulate M. Gérardin and his co-worker, M. Guède, on the production of a useful and characteristic little text-book. There is a certain novelty in the arrangement of the matter, and considerable novelty, at any rate from a text-book point of view, in the illustrations. Mention is generally, though not always, made of the source from which the latter have been borrowed; we notice that Sir John Lubbock's *Seedlings* has supplied several. Unfortunately, owing to the paper being rather thin and not of the best, the pictures occasionally suffer; this is most noticeable in the first few pages on the cell.

The chapter on the leaf is especially good, and well illustrated; the diagrammatic schemes of phyllotaxy are helpful, and the excellent pictures (*not* diagrams) of prefoliation are better than pages of description. The anatomy is treated more fully than is generally the case in similar works, and drawings of numerous sections show some of the differences in arrangement of supporting and assimilatory tissue, so that the student is not sent away with the idea that the internal structure of all leaves conforms to a single type. A useful addition to this chapter is a series of tables, by aid of which the names of the most common trees and shrubs of Northern France can be worked out from their leaf-characters.

The book deals only with morphology and physiology, and is to be followed by a second (now in the press), on classification, and geographical botany and palæontology. Whether the two are to be bound up together, and to have a common index, is not stated in the preface; at all events, nothing beyond a table of contents is supplied with the present volume, and that, too, is out of place at the end of the matter.

In the first part, "Morphology," a chapter on the cell is followed by one on the tissues, which are considered in order according to function, whether formative, protective, supporting, nutritive, secretory, or reproductive. Thus the somewhat difficult question of a relation to certain defined layers in the growing point is not discussed. After a short chapter on the distinction of four great groups, the morphology of root, stem, leaf, and flower is successively treated. Then comes a chapter on reproduction in general, in which we are glad to find a much more explicit account of grafting than is usual in a text-book of botany. The process of development in the four groups is briefly dealt with, and the part ends with a description of the fruit and seed.

The "Physiology" starts, as it should, with germination of the seed. Then nutrition, respiration, and circulation are discussed in order, followed by "reserve materials," including "secretion" and "excretion." The two chapters on "Fermentations" and "Culture of Micro-organisms," the former a *résumé* of M. Emile Bourquelot's work on the subject, are a useful feature, but would have been more fitly placed at the end of the part, after Chapters IX. and X., on "Irritability" and "Growth," which in the present arrangement come last.

A. B. R.

Experimental Plant Physiology. By D. T. MacDougall. New York: Henry Holt & Co. 1895. 8vo, pp. vi, 88; figs. 71.

Prof. MacDougall, of the University of Minnesota, who is one of the most active teachers of botany in the United States, has done well in producing this little book. It is especially welcome at a time when efforts are being made to teach plant physiology more widely, not to cram it. It has been the excuse that plant physiology could be taught only in laboratories possessing expensive apparatus, and, except in a few well-known places, the teaching took the form of a more or less connected series of assertions by the lecturer. Prof. MacDougall shows what can be done with comparatively simple and easily accessible tools. It will be remembered (see *Journ. Bot.* 1894, p. 284) that he translated Oel's *Pflanzenphysiologische Versuche*, and he now retains the general form of that book, and many of the illustrations. This is a distinct improvement in many respects. Future editions might be still further improved by a greater effort to simplify the style, which is unnecessarily lavish in technical terms, and here and there somewhat involved in the directions. However, when one considers the great difficulties that attend this subject, and the demonstration of it in particular, there is room for thankfulness that so much can be taught with such simple means. Prof. MacDougall deserves hearty encouragement in his enterprise, and success is certain to attend it. G. M.

BOOK-NOTES, NEWS, &c.

The *Bulletin of Miscellaneous Information* issued in connection with Kew Gardens, which has been for some months in abeyance, is again being issued. In the instalment dated "April and May," but really published towards the end of June, Mr. J. G. Baker continues the "Diagnoses Africanæ" for the orders *Oleaceæ* and *Loganiaceæ*. It is to be regretted that more care has not been taken to consult existing literature. The plant (Welwitsch no. 926) on which Mr. Baker founds his *Jasminum brevipes* is cited by Knoblauch (*Bot. Jahrb.* xvii. 536 (1893)) for his *J. ternum*. *Strychnos subscandens* Baker (Welw. 6018) and *S. microcarpa* Baker (Welw. 4765) are cited by Gilg (*op. cit.* 573) as types of his *S. Welwitschii*, and are undoubtedly identical. *S. xerophila* Baker = *S. Unguacha grandifolia* Gilg (*l. c.* 564), Schweinfurth 1719 being cited for both. It can hardly be the case that the important papers in the *Jahrbuch*, containing descriptions of numerous new species, have been overlooked, but it would seem that their contents have been imperfectly appreciated.

The sixth Annual Report of the Missouri Botanical Garden "differs from those which preceded it in the omission of the section comprising the annual flower sermon and the proceedings at the two annual banquets instituted by Mr. Shaw." We congratulate the Director, Prof. Trelease, on this alteration, which we are vain enough to think may be in some measure due to our repeated protests against the disfigurement of these handsome and useful volumes by the inclusion of matters which could hardly be considered as of even temporary interest. This Report contains a Revision of N. American Sagittaria, by Jared G. Smith, with 29 plates; a study of *Leitneria florida*, by Prof. Trelease, with 15 plates; studies on the dissemination and leaf reflexion of *Yucca*, by Herbert J. Webber, with 3 plates; and one or two smaller papers. The printing, paper, and general get-up of these volumes leave nothing to be desired.

Mr. J. E. Griffith has issued a *Flora of Anglesey and Carnarvonshire*, in good time to be of service to botanists who may be taking their autumn holiday in North Wales. It is printed and published at Bangor, by Messrs. Nixon and Jarvis, who seem unaware of the importance of dating a title-page. We hope to notice it at an early opportunity.

Some fifteen years ago the British Museum acquired Hampe's fine collection of Hepatics, and by that timely addition to its Herbarium pushed forward the value of the latter far along the scale which lies between insignificance and perfection. But in the subsequent lapse of time, in proportion as our knowledge of the group has been rapidly extended by the researches of such active hepaticologists as Spruce and Stephani, so has the scale to be traversed been expanded and the perfection-point been raised; and hence the Museum has felt called upon to make a corresponding advance. Arrangements have been made with Herr Franz Stephani for the purchase of half his herbarium—of half, that is to say, of all his specimens which will bear splitting. These amount to some 10,000, and include 1100 of his new species. The first instalment has been received, and consists of the genera *Frullania*, *Mastigobryum*, and *Plagiochila*.

Messrs. J. C. Willis and I. H. Burkill publish in the *Annals of Botany* for June the first part of an interesting paper on "Flowers and Insects in Great Britain." Mr. Batters contributes to the same number a paper on new British Algæ, in which he further characterizes his genera *Buffhamia* and *Tellamia*, and publishes a new genus, *Hymenoclonium*. The plant described and figured by Mr. Buffham in this Journal for 1891 (p. 321, t. 314) as a form of *Myriotrichia clavæformis* is described as a new species by Mr. Batters under the name *M. densa*.

Dr. Hugh Francis Clarke Cleghorn, whose death took place at Strathbithie, Fife, on the 19th of May, was born at Madras. He graduated at Edinburgh, and became a Fellow of the Botanical Society of that city in 1837, shortly after its foundation. After this he returned to Madras, directing his attention more especially to medical botany. In 1854 he was appointed Professor of Botany in the Madras University, and took a leading part in the establishment of the India Forest Department, with the work of which he was for many years intimately associated. In 1869 he returned to Scotland, and was for a short time Professor of Botany at Glasgow; he retained his interest in botany till the end of his life. Cleghorn's principal work was a book on *The Forests and Gardens of South India*, published in London in 1861. He was also author of numerous Indian forest reports, and of a large number of papers chiefly dealing with economic plants, and published for the most part in the Transactions of the Botanical Society of Edinburgh. In 1853 he published a Catalogue of the plants in the Agri-Horticultural Society's Gardens at Madras, and in 1856, also at Madras, a general index to Wight's *Icones*. Ho joined the Linnean Society in 1851. The genus *Cleghornia*, named in his honour by Wight (*Icones*, 1310), is now merged in *Baissea*.

CHARLES CARDALE BABINGTON.

(WITH PORTRAIT.)

CHARLES CARDALE BABINGTON was born on November 23rd, 1808, at Ludlow, in which town his father, Joseph Babington, was a physician. When he was four years old, the family removed to Spaw Place, Humberston Gate, Leicester, and subsequently, Mr. Babington having received ordination in the Established Church, to Hawksworth, in Nottinghamshire. Mr. Babington had a fondness for botany, and contributed a list of plants found near Ludlow to Plymley's *Agriculture of Shropshire*. While at Ludlow he sent lichens to Sir J. E. Smith, some of which were figured and described for *English Botany* (see *E. Bot.* 450, 740, 887).

When he was eight years old, young Babington was sent to Needwood Parsonage, Staffordshire, for private tuition, where, his diary tells us, he was not well treated. After being at another private school, he was sent (in 1821) to the Charterhouse, but here he did not stay long. "Not getting on well with my learning," says his diary, "I was removed at my own wish from the Charterhouse, and went to Mr. W. Hutchins's school at Bath." His father, whose infirmities had compelled him to abandon clerical duty, had at this time settled in Bath. During the time that young Babington was a day-scholar at the school mentioned, he "formed an intimate acquaintance with the neighbourhood of Bath, and began to study its botany and to collect plants and insects." His father had previously taught him the elements of botany, from Lee's *Introduction* and Withering's *Arrangement*.

On Oct. 11th, 1826, Babington took up his residence at St. John's College, Cambridge. In the following year, he notes under April 30th, "Went to Prof. Henslow's first lecture on Botany," and on May 2nd, "Conversed with him after the botanical lecture, and was asked to his house. Assisted Prof. Henslow in putting things in order before and after the lectures." In 1830 he took his B.A. degree and became a Fellow of the Linnean Society, of which at the time of his death he was the "father." In 1833 he went into college, and was created M.A.

It was in this year that his more definite botanical work began. We have seen that during his school days he studied the plants of Bath, and on visiting that city in July, 1831, he was requested by Mr. E. Collings "to look over a list of the Bath plants, and make additions and corrections. I found the list so imperfect that it was determined to endeavour to complete my own list of those which I had observed. I worked hard all the summer, and finished the manuscript on the 15th October, having had the loan of Dr. H. Gibbes's *Flora Bathon.* and assistance from Mr. E. Simms and Dr. J. F. Davis."

The *Flora Bathoniensis* was published at the beginning of 1834; it contains a few critical notes and references to continental floras, which indicate the lines of the author's future work, and adds *Euphorbia pilosa* (called *epithymoides*) to the British Flora.

In 1836 (at its second meeting) Babington became a Fellow of the Botanical Society of Edinburgh. In 1837 (at the beginning of which he "was taken with the prevalent influenza") he made his first visit to the Channel Islands, in company with R. M. Lingwood, with whom and John Ball, another Cambridge friend, he had visited Ireland in 1835.* He returned in 1838, and the results of his observations are embodied in his *Primitiæ Floræ Sarnicæ*, published in 1839. A much more important work, however, was already in progress. In his diary for 1835 is the entry: "May 11. Commenced my Manual of British Botany," and with this his time was largely occupied until 1843, when the last proof of the book ("which has kept me most fully occupied all the winter") was corrected: the preface is dated May 1st, 1843. Of this work it is not too much to say that it revolutionized the study of British plants, and gave an impetus to thought and work among British botanists to a degree unequalled by any publication of the century. To say this is by no means to ignore the excellence of Smith's *English Flora* (1828), or to depreciate other books then existing, such as the seventh edition of Withering's *Arrangement* (1830). But the bulk of these, augmented as it was in the latter case by the addition of a vast quantity of extraneous though not uninteresting matter, rendered them cumbrous for field work; and although the useful *Compendium of the English Flora* (which first appeared in English in 1829) was sufficiently convenient in size, the descriptions were meagre. Hooker's *British Flora*, which first appeared in 1830, successfully supplied the demand for a compendious handbook, as is shown by the fact that four large editions were exhausted in less than twelve years. These were all arranged on the Linnean system, but the fifth edition, published a year before the *Manual*, followed the natural arrangement. But by this time Sir William Hooker had become Director of Kew Gardens, and it is not astonishing that his new labours left him but little time for British botany. Save in its rearrangement, this edition shows little advance upon its predecessors; and the time was ripe for the appearance of a new book.

Other important reasons for the production of such a work are well set forth in the preface to the first edition of the *Manual*—a thousand copies of which, as of subsequent editions, were printed. Babington tells us that, having taken up British Botany, he "had not advanced far in the critical examination of our native plants before he found that a careful comparison of indigenous specimens with the works of eminent continental authors, and with plants obtained from other parts of Europe, must necessarily be made, for it appeared that in very many cases the nomenclature employed in England was different from that used in other countries, that often plants considered as varieties here were held to be distinct species abroad, that several of our species were only looked upon as varieties by them, and also that the mode of grouping into genera was frequently essentially different. The discovery of these facts produced considerable astonishment, and the author was led to consider what could have been the cause of so remarkable a discrepancy. The following appears to be the most probable explanation. It is well known that at the close of the last century Sir J. E. Smith became the fortunate possessor of the Herbarium of Linnæus, and was thus enabled to ascertain, with very considerable accuracy, the British species which were known to that distinguished man, and to publish, in the most improved form that he had given to his system, a remarkably complete and excellent Flora of Britain. Then followed the long-continued separation of this country from France, and indeed from most of the European nations, by which we were almost completely prevented from observing the progress which botanical science was making in other countries, and at the same time our own flora was continually receiving accessions of new plants which it was nearly impossible to identify with the species detected and published in France and Germany. At the conclusion of the war we had become so wedded to the system of Linnæus, and, it may even perhaps be allowable to add, so well satisfied with our own proficiency, that, with the honourable exception of Mr. Brown, there was at that time scarcely a botanist in Britain who took any interest in or paid the least attention to the classification by natural orders which had been adopted in France, and to the more minute and accurate examination of plants which was caused by the employment of that philosophical arrangement. . . . . The publication of so complete and valuable a Linnæan work as the *English Flora* greatly contributed to the permanency of this feeling, and accordingly we find that at a very recent period working English botanists were unacquainted with any of the more modern continental floras, and indeed even now many of those works are only known by name to the great mass of cultivators of British botany."

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* Babington's account of this visit will be found in *Mag. Nat. Hist.* ix, 119–130 (1836).

The continental floras mentioned as having been consulted for the *Manual* are entirely German—Koch's *Synopsis*, Reichenbach's *Icones* and *Iconographia*, and Sturm's *Deutschlands Flora*. In the second edition (1847) Nees's *Genera* and Schkuhr's *Riedgräser* are added. The third and fourth editions (1851 and 1856), although including "many additions and corrections," do not present many noteworthy changes, except in detail: but the care which the author took in revising each edition should be mentioned. Babington's interleaved copies of each issue are preserved in the Cambridge Herbarium, and afford ample evidence of the conscientious work which rendered the often-abused phrase "new edition" no empty formula. Mr. Newbould had a similar copy; his suggestions were always at Babington's service, and frequently proved useful.

The fifth edition, published in 1862, is noteworthy for the recommendation of numerous French works, especially Grenier and Godron's *Flore de France*, and of Fries's *Novitiæ*. From this it will be seen that by this time Babington had mastered the contents of the principal critical floras of the Continent, and had recognized their bearing upon British plants. Following his *dictum* "It is most desirable that the students of our native Flora should not confine their attention to books published in this country," comes the sound advice, which even at the present time cannot be considered altogether needless:—"It is necessary to warn students against the very common error of supposing that they have found one of the plants described in a foreign Flora, when in reality they have only gathered a variety of some well-known British plant. The risk of falling into such errors renders it necessary to consult such works as those of Messrs. Boreau and Jordan with great caution, lest we should be misled by descriptions most accurate indeed, but often rather those of individuals than species. Amongst plants so closely allied as are many of those called species in some continental works, it is scarcely possible to arrive at a certain conclusion without the inspection of authentic specimens."

Shortly after the publication of the fourth edition of the *Manual*, an important rival had appeared in Mr. Bentham's *Handbook of the British Flora* (1858). There is no need here to enter upon a discussion as to the relative merits of these works, each of which has proved useful to many generations of botanists; but it may be well to reprint the remarks which Babington made in the preface to this fifth edition of the *Manual*—the next which appeared after the publication of Bentham's book, which latter, as every one knows, considerably "reduced the number of our native species." No one would disparage for one moment the value of Bentham's work or the sanity of his conclusions; yet it is well known that it was mainly based upon the examination of herbarium specimens, and this in spite of the large number of living plants always at hand, in the Gardens to which the Kew Herbarium is an adjunct.

"An attempt has recently been made," says Babington, "greatly to reduce the number of our native species. The results obtained seem to be so totally opposed to the teaching of the plants themselves, and the evidence adduced in their favour is so seldom more than a statement of opinion, that they cannot safely be adopted; nor does the plan of the present work admit of a discussion of the many questions raised by them. Also, it has been laid down as a rule by some botanists that no plant can be a species whose distinctive characters are not as manifest in an herbarium as when it is alive. We are told that our business as descriptive botanists is not 'to determine what is a species,' but simply to describe plants so that they may be recognized from the dry specimen. The author cannot agree to this rule. Although he, in common with other naturalists, is unable to define what is a species, he believes that species exist, and that they may often be easily distinguished amongst living plants, even when separated with difficulty from their allies when dried specimens only are examined. He also thinks that it is our duty as botanists to study the living plants whenever it is possible to do so, and to describe from them; to write for the use and instruction of field- rather than cabinet-naturalists—for the advancement of a knowledge of the plants rather than for the convenience of possessors of herbaria; also, that the differences which we are able to describe as distinguishing plants, being taken from their more minute organs, is not a proof that they constitute only a single species. It seems to be our business to decide upon the probable distinctness of plants before we attempt to define them; to make the species afford the character, not the character form the species."

The sixth (1867), seventh (1874), and eighth (1881) editions were reviewed at some length in this Journal on their appearance by Mr. Carruthers, Dr. Trimen, and myself respectively,* and the principal changes which accompanied them duly noted. One sentence may be quoted from the last of these which is applicable to every edition: "The words 'corrected throughout' which appear upon the title-page are always amply justified by the contents of the volume; and although many of the alterations introduced into each successive edition seem in themselves trifling, they show a gratifying anxiety for accuracy in detail, and that no pains have been spared to ensure a satisfactory result." Babington's deprecatory note regarding these alterations and the modest statement of his aims with which it concludes are very characteristic: "The progress of our knowledge has caused changes in the nomenclature in successive editions of this book and in the author's views of the value of forms—as species or varieties. The inconvenience of these alterations to all, especially to statistical botanists, is fully admitted; but the author does not know of any mode by which it can be avoided if each edition is to be brought up as completely as is in his power to the contemporary knowledge of our plants. No alterations have been admitted until careful study has convinced the author that they are required. He may have fallen into error, but has earnestly endeavoured to discover the truth." With regard to nomenclature, however, Babington was by no means a rigorist, as will be seen by a reference to his paper on the subject in this Journal for 1888, pp. 369–371, although in the case of the transference of a species he supported "the plan adopted by most botanists until very recently, of giving as the authority for the binomial name the author who placed [the species] in its new and apparently more correct genus."

Although, as every one knows, Babington was, even before the publication of the *Manual*, the recipient of communications from "botanical friends and correspondents almost too numerous to mention," it may be of interest to cite the names of those whom he singles out for special mention. In the first edition he names J. H. Balfour, D. Moore, W. Borrer, E. Forster, J. E. Henslow, and W. A. Leighton, and most of these are mentioned in the second edition. Thereafter none are named; had any been mentioned, it would assuredly have been Mr. Newbould, whose devotion to the *Manual* and its author amounted almost to a *cultus*, and whose excitement during the preparation and on the publication of a new edition was almost ludicrous in its intensity.

It seemed desirable to say what had to be said about the *Manual* in a connected form; but we must now return to the period when the first edition appeared. Before Babington had any official connection with the "University," his influence was apparent in many directions. He took an important rather than a prominent part—for he was always of a retiring disposition—in numerous projects which space will not allow us to enumerate here, and was generally helpful. A resident of more than forty years testifies that he was then "the central figure among those in Cambridge who took delight in Natural History: and his simple character and keen interest in nature were very attractive to younger men who had similar likings. He certainly did more, in my time, than any one else to promote the study of Natural Science in the University." As an archæologist he took a high position; he published papers on "Ancient Cambridgeshire" and the history of the chapel of his college.

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* *Journ. Bot.* 1867, 184; 1874, 215; 1881, 280.

In 1836 a society called the Ray Club was formed, to take the place of Henslow's Friday evening parties: in this Babington took a leading part, and he was the last survivor of its founders. In 1844 the Ray Society was established; Babington was on the council, and many of the publications, such as the *Memorials of Ray* and the volume of his *Correspondence*, owe much to his help: the preface to the latter says that he had "looked over the proof sheets, given the modern names of the plants referred to, and added many valuable notes." In or about 1862, a Committee of the British Association, consisting of Babington, Newbould, and J. E. Gray, was appointed to prepare a report on the plants of Ray's *Synopsis Stirpium*, but this, unfortunately, was never presented.

The list of papers under Babington's name in the Royal Society's Catalogue, which extend down to 1883, is 131, and several have appeared since then in this Journal. His first paper, however, was not botanical, but entomological; it appeared in the *Magazine of Natural History* for 1832, and enumerated certain "Additions to the List of British Insects," among which are some beetles new to science. He was an ardent student of insects, and at first his work seems to have lain in that direction, as out of the first twelve papers which he published, seven were entomological. But his last contribution to entomology was the "Dytiscidæ Darwinianæ," published in the Entomological Society's Transactions for 1841–43, since which time his published papers have been almost entirely botanical. A large number of these appeared in the short-lived *Botanical Gazette* (1849–51) and in the pages of this Journal, of which he has always been a friend and supporter: the first article in our first volume is from his pen, and his name appeared in our list of contributors for 1891. Among papers calling for more especial mention may be noted the "Revision of the Flora of Iceland,"* in which he brought together with much care the results of previous investigators, embodying with these his own observations made during a brief visit in 1846. This and his visit to the Channel Islands were the only occasions on which Babington left England.

Besides the papers which stand in his name in the abovementioned Catalogue, Babington described several plants for the

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* *Journ. Linn. Soc.* xi. 282–348.

Supplement to English Botany (*Glyceria Borreri* Bab., t. 2797), the first and last plates of which were accompanied by text from his pen. The first, *Glyceria Borreri* (t. 2727, issued 1837), had been previously detected by Borrer, and Babington named it "after its discoverer, as a slight acknowledgment of the many favours received from him." The figure had been drawn by Sowerby as far back as 1829, and is marked by him "Glyceria species nova?": Hooker, however, notes on the drawing, "I cannot make this a new species": there are also notes in Borrer's and Babington's writing. The last, *Anacharis Alsinastrum* (t. 2993), was not published until 1865. This plant, as is well known, shortly after its introduction to the Cambridge Botanic Gardens, made its escape through a waste pipe, found its way into the Cam, and in 1852 impeded navigation and threatened to injure the drainage of the fen country. The plant was styled by some humorous undergraduate *Babingtonia*, to which some uncomplimentary epithet—*diabolica*, *pestifera*, or *damnosa*—was added. It is unnecessary to say that Babington was in no way directly responsible for the introduction, and the name does not find any place in the *Index Kewensis*, although it certainly has some claims to inclusion. The genus named in his honour by Lindley (*Bot. Reg.* 1842, t. 10) is now by common consent referred to *Bæckea*, so that no distinct generic type is associated with him, although *Atriplex Babingtonii* commemorates his early critical work at a difficult genus.

It was in 1846 that the "Synopsis of British Rubi"—the forerunner of the important book issued in 1869—appeared in the *Annals and Magazine of Natural History*. It was reprinted in pamphlet form, and gave an impetus to the study of this troublesome group, the effects of which are by no means expended. The later work, *The British Rubi*, was printed at the cost of the University Press, and was to have been accompanied by a volume of plates by Mr. J. W. Salter. Some of these were completed and printed off, and are extremely beautiful; but the work was arrested by Salter's death, and has not since been proceeded with. The acquisition of Genevier's great *Rubus* herbarium enabled Babington to pursue the study of this, his favourite group, with the assistance of a large series of French types: he had for many years been preparing a new edition of the *Rubi*, in which the comparison of our English plants with these would have doubtless suggested interesting conclusions. In 1851 he was elected F.R.S.

In 1860 Babington published his *Flora of Cambridgeshire*—an excellent book, to which may be largely attributed the historical treatment which prevails in our best local floras.

On the death of Prof. Henslow, on May 16th, 1861, it seemed obvious that Babington would be his successor, and in less than a month he was appointed to the post. He at once set to work to improve the Herbarium, which was in an unsatisfactory condition; additions were steadily made, both to it and to the library, some of them, such as Genevier's *Rubi*, at Babington's expense. His own time was so much occupied, as he states in the Museum Report for 1881, in examining plants for other people, that the work of incorporating additions and rearranging the collections was mainly left to his assistants—Messrs. W. Hillhouse (1878–81), T. H. Corry (1881–83), M. C. Potter (1884–91), and I. H. Burkill, who still occupies the post, and to whose kind helpfulness in the preparation of this memoir I am largely indebted. Mr. Corry, it will be remembered, met his death by drowning, and Babington's notice of him (*Journ. Bot.* 1883, 313) shows a warm appreciation of his talents and personal qualities—"I lose in him not only an excellent scientific helper, but also a very greatly valued friend."

Mr. Burkill writes: "His extreme kindness kept him always busy for others—this was one of his most noticeable characteristics. When he appointed me as his assistant in 1891, it was but a month before his illness; but then and during the three previous years, when from time to time I had had occasion to ask his advice about any plant, I always found him busy with the same work—either Rubi from his own collection or Rubi for some one else: more rarely it would be something of a different genus, but nearly always it was work for somebody who had written to him. I myself owe much to him for his great kindness. When I began work here, he used to come down an hour earlier than usual, because he found it suited me better, and he liked to be there to help me in getting started. He was extremely retiring in many ways, and though he usually spent more money on the maintenance of the Herbarium than the allowance, he never mentioned it in his report. He was extremely methodical: everything was noted down at once. His critical work was rather slow and sure, for he always said that another would take in the difference between the plants in less time than he could. He did not see differences at the first glance, but worked them out slowly and thoughtfully."

The extreme kindness which Babington showed to all with whom he came in contact, and especially to beginners in his favourite science, was very marked. He answered letters promptly, and his replies were full of interest; many of those who subsequently made for themselves a name among British botanists were stimulated by his encouragement. He was glad to share his pleasure with others; when away on a holiday in some place where interesting plants abounded, he would say, "We must get Newbould down here," conscious that his old friend and admirer would take keen delight in the things which gave him so much happiness, as well as in the genial company which would recall early rambles together. For, as the sketch which I published of Mr. Newbould* shows, a warm attachment existed between the two botanists, dating from their college days. Newbould had met Babington in Scotland in 1845, had accompanied him to Pembrokeshire in 1848, to Ireland in 1852 and again in 1858, and to North Wales (with Jacques Gay) in 1862: they had previously worked in Cambridgeshire and Essex, and in later life a visit to Babington was one of the keenest joys of Newbould's existence. They spent a pleasant time together at Grange-over-Sands in 1884, after the meeting of the British Association at York. Babington's affectionate tribute to the memory of his friend will be found in this Journal for 1886, p. 159.

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* *Journn. Bot.* 1886, 161–174.

Any account of Babington would be incomplete which did not contain some reference to the strong religious spirit which dominated his life. Brought up in the "Evangelical" school of thought, which at that time aroused the Established Church from the lethargy into which it had sunk, he, unlike so many of his contemporaries, —the two Newmans, for instance,—never deviated from his early beliefs. As a boy he became acquainted with William Wilberforce, an old friend of his father; at Cambridge as an undergraduate he heard Charles Simeon preach, and later took others to hear him; he attended missionary meetings where Baptist Noel spoke; he supported Connop Thirlwall in the action which he took as to the admission of dissenters to academical degrees; and in later life—indeed, up to his death—actively supported a number of philanthropic societies, all characterized by a strong Protestant tone. His drawing-room was a centre for meetings of these bodies, and, in conjunction with Mrs. Babington, he promoted missionary work both at home and abroad. But all was done quietly and unostentatiously; and however strong his principles might be, his natural kindliness of heart and consideration for others prevented that aggressive assertion of them which characterizes the less cultured representatives of Protestantism. The various and ever-varying aspects of Biblical criticism and the evolution hypothesis never disturbed him. His friend the Rev. H. C. G. Moule, Principal of Ridley Hall, writing in the *Record* for Aug. 9th, says: "Like Sedgwick, his elder friend, and Adams, his younger, he seemed to live above perplexity and doubt, in a bright, pure air and light, in which the imagined conflict between research and the believer's hope was nowhere to be seen. To him the Bible was the Word of his Lord, reverenced and believed without reserve; worship was his delight; and his keen, practical interest in Christian work ran side by side with his enquiries into nature and history." But he was fair to those from whom he differed. Prof. Mayor, writing of a memorable encounter of the British Association, of which body Babington was always a member,—it was at a meeting of the Association that he first met the lady whom he married in 1866,—says: "I well remember the glee which he displayed over Samuel Wilberforce's discomfiture by young Huxley. In creed, doubtless, he was much nearer to the Bishop than to his conqueror, but he distrusted and hated clap-trap as a stop-gap for argument and fact. In later life he lamented the tendency to forsake Huxley's *Physiology* as outworn."

Like many of the older men, Babington was not in sympathy with the more recent tendencies of botanical research, the introduction of which by Dr. Vines, coupled with the non-insistence of the attendance of medical students, caused a great diminution in the number of those present at his lectures. Prof. Mayor says: "He pitied the botanist who, never seeking living plants in their homes, armed with microscope, ransacks their cell and fibre. A student of the first class in the Natural Science Tripos, observing a specimen of (what I will call X) in his drawing-room, on learning the name cried, 'So that is really X? I know all about that; I guessed it would be set, and it was.' Science which cannot see the wood for the trees, growing herb or animal for cell laid bare by scalpel, had for him no charm. His joy in Nature was the joy of a child." On one of his few visits to the Botanical Department of the British Museum he told us with much relish a story which may be a variant of the foregoing—how a young lady, coming into his room and seeing a specimen of *Peziza coccinea* on his table, was struck by its beauty, and asked its name. On being told, she exclaimed, "Peziza! why, I have been working at that for a fortnight!"

During the later years of his life, Babington—always in company with his devoted wife, who shared all his interests—spent long periods of rest in various parts of the country—Yorkshire, Cornwall, Durham, and Scotland, especially at Braemar, which they visited annually from 1886 to 1891. The rest of the year was spent at Cambridge, where on a fine day he might be seen in his wheel chair either in the Botanic Gardens or on the Trumpington Road, or at other places, or occasionally going for drives, almost the last drive being to Cherry Hinton Chalk-pit close (1894). All the winter he would be in the house, and read from morning to night, his sight being excellent. He was never in the Herbarium after August, 1891, but he retained charge of this till his death, his assiduous assistant, Mr. Burkill, visiting him weekly to receive such instructions as were necessary. Some two or three years since he appointed Mr. Frank Darwin Deputy-Professor, with the charge of the laboratories. His own herbarium and library, the latter containing some 1600 volumes, are bequeathed to the University: the interest of the former, of course, lies mainly in the *Rubi*, but there is also an extremely interesting collection of British plants, formed during his long botanical career.

His end, like his life, was peaceful. When the news of his death, which took place on the 22nd of July, reached me, I was staying at a Benedictine abbey in the far north; and the motto of the house—"Pax"—seemed the most fitting message of sympathy which could be sent. It is pleasant to know that the message gave comfort to the one for whom it was intended. The funeral took place at Cherry Hinton on July 26th, none but friends and the Cambridge botanical staff being present.

I have to thank Mrs. Babington for permission to reproduce the portrait (taken some twelve years since) which accompanies this article, and for much help, not only now but in the past; also Prof. Mayor, for proofs of the obituary notice which he has prepared for *The Eagle*, and Mr. I. H. Burkill for assistance in very many ways.

James Britten.

CONTRIBUTIONS TO SOUTH AFRICAN ASCLEPIADOLOGY.

By R. Schlechter.

(Continued from Journ. Bot. 1894, p. 358.)

DECAS III.

21. **Schizoglossum robustum** Schltr., n. sp. Herba simplex, erecta, valida; caule subtereti tomentoso, dense foliato, 30–45 cm. alto; foliis inferioribus sæpius alternantibus more *S. pulchelli* Schltr. (in *Engl. Jahrb.* vol. xviii. Beibl. 45, p. 15), superioribus oppositis vel verticillatis, erecto-patentibus linearibus acutis marginibus revolutis basi obtusis vel in petiolum brevissimum angustatis, superne scabridis glabrescentibus subtus præsertim basin versus costa margineque villosis, 2·5–3·5 cm. longis, medio 0·4–0·7 cm. latis, petiolo brevissimo villoso; floribus glomeratis vel in umbellis subsessilibus extra-axillaribus alternantibus plurifloris, pedicellis divaricatis teretibus villosis, quam folia brevioribus, 5–7 cm. longis; floribus illis *S. fasciculati* Schltr. similibus, calycis segmentis lanceolatis acutis pilosis, quam corolla duplo brevioribus; corollæ lobis erecto-patentibus ovato-oblongis obtusis extus sparsim pilosis intus glabris, 0·5 cm. longis, medio vix 0·3 cm. latis; coronæ foliolis erectis e basi subquadrato-cuneata apice margine utrinque in dentem brevem linearem acutum exeuntibus, medio in ligulam erectam linearem acutam dentes laterales multoties superantem productis, intus medio appendice brevi ligulato acuto marginibus in lamellas decurrenti ornatis, basi squamellis parvulis 5 alternantibus quasi coronam interiorem efficientibus auctis; antheris oblongis marginibus cartilagineis angustioribus loculos longitudine æquantibus, appendice hyalino suborbiculari, in stigma inflexo, marginibus loculorum excisis; polliniis anguste oblongis obtusis in caudiculam filiformem glandulæ basi affixam transeuntibus, glandula oblonga obtusa quam pollinia triplo minori.

In collibus prope villam Ixopo, alt. c. 4000 ped., florens Jan. 1895, *R. Schlechter*, No. 6659; loco incerto, Natalia, *J. M. Wood*.

A novelty of the section *Aspidoglossum* (E. Mey.) Schltr., which seems to be nearest allied to *S. fasciculare* Schltr., but may be recognized by the stronger growth, broader leaves, different indumentum of the stem, leaves, and flowers, and a distinct corona; remarkable in the genus for the presence of a second row of scales, which, although very small, are distinctly alternate to the outer corona. The first specimens of this species were sent to me by Mr. Wood, but, as they are not at present at hand, I am unable to mention a more exact locality or Mr. Wood's number. The description was made from a specimen collected by myself near Ixopo, also in Natal.

22. **Schizoglossum tricuspidatum** Schltr., n. sp. Planta tenella erecta, aspectu *S. carinati* Schltr., simplex, caule subtereti tenui velutino, basi glabrescente dense foliato, 16–20 cm. alto; foliis erectis anguste linearibus acutis, marginibus revolutis, basi in petiolum attenuatis, superne glabrescentibus subtus costa puberulis, 1–2·7 cm. longis, petiolo brevissimo puberulo; floribus in glomerulis

extra-axillaribus alternantibus plurifloris, subcapitatis; pedicellis brevibus teretibus velutino-puberulis, 0·3 cm. longis; floribus pro genere minoribus; calycis segmentis lanceolatis acutis puberulis, quam corolla subduplo brevioribus; corollæ lobis ovato-oblongis obtusis utrinque puberulis, 0·2 cm. longis, 0·1 cm. latis; coronæ foliolis erectis e basi ovato-oblonga in ligulam erectam linearem obtusam, gynostegium subduplo superantem, attenuatis, intus e basi medio appendice ligulato dorso alte adnato apice libero tricuspidato ornatis, dentibus lateralibus triangularibus minoribus acutis, intermedio duplo majore; antheris oblongis appendice hyalino transverso obtusissimo, apice in stigma inflexo, marginibus loculorum rotundato-emarginatis; polliniis pyriformibus obtusis, caudiculis filiformibus divaricatis, glandulæ basi insertis, glandula anguste oblonga apice obtusa, quam pollinia paulo breviore, tamen multo angustiore; stigmate generis depresso.

In loco orientali incerto coloniæ Capensis, probabiliter Kaffrariæ, *Mrs. Barber*.

I propose to put this interesting plant next to *S. carinatum* Schltr., with which it agrees fairly well in general appearance, although the flowers in our plant are more shortly pedicellate, and, on account of this, look more capitate. The inner ligula of the corona-scales is very distinctly trifurcate at the apex; the pollinia, and especially the gland, differ also from those of *S. carinatum*. I have only seen a few plants of this evidently rare species, which were collected by Mrs. Barber, and are now to be found partly in the collections of the Grahamstown Museum in the Cape Colony, partly in my own herbarium, but unfortunately, like many of Mrs. Barber's plants, without any details of locality or of the colour of the flowers.

23. **Schizoglossum Wallacei** Schltr., n. sp. Planta humilis, e basi parum ramosa; ramis erectis subteretibus densius foliatis unifariam villosis basin versus glabrescentibus; foliis linearibus vel lineari-lanceolatis obtusis, basi subhastato-truncatis, marginibus revolutis, superne scabre pilosis, subtus glabris, 1·8–2·5 cm. longis, supra basin 0·4–0·8 cm. latis, internodia excedentibus; floribus in umbellis extra-axillaribus alternantibus paucifloris, folia excedentibus, pedunculo erecto tereti piloso, foliis æquilongo, pedicellis inæquilongis pilosis filiformibus quam flores 3–4-plo longioribus; calycis segmentis erecto-patentibus lanceolatis acutis pilosis quam corollæ lobi duplo brevioribus; corollæ lobis erecto-patentibus ovato-oblongis obtusis utrinque glabris marginibus reflexis, 0·6 cm. longis, medio 0·3 cm. latis; coronæ foliolis erectis ovatis, apice tridentatis, dentibus lateralibus quam intermedius multo majoribus erectis, intermedio minuto subinconspicuo, intus medio supra basin ligula alte bifida, partitionibus erectis obtusis folioli dentes laterales haud excedentibus ornatis; antheris oblongis, marginibus cartilagineis pro genere satis latis, loculos longitudine æquantibus, appendice hyalino-ovato obtusissimo in stigma inflexo, marginibus loculorum rotundato-emarginatis; polliniis ovoideis, caudiculis brevibus divaricatis medio affixis, parte superiore angustatis, glandula oblonga obtusa caudiculis basi adhærentibus.

Prope Heilbronn in terra Orange Free State, *Rev. Wallace* (comm. *Dr. S. Schönland*).

This species belongs to my section *Eu-Schizoglossum*, characterized by the insertion of the *caudiculæ*, not on the top, but about the middle, on the inner side of the *pollinia*. As far as I am at present able to judge, this section seems to be confined to Extra-Tropical South Africa. All the tropical species, as well as the Abyssinian, seem evidently members of the section *Lagarinthus*, with the exception of a few, which do not belong to the genus *Schizoglossum*, but to *Gomphocarpus;* of these I may mention here *G.* (§ *Pachycarpus*) *Grantii* Schltr. (*Schizoglossum Grantii* Oliv.) and *G.* (§ *Pachycarpus*) *spathulatus* Schltr. (*Schizoglossum spathulatum* K. Schum.), which both seem to me to be true *Pachycarpi*. The fruit of the former is winged, and thus shows another character of *Pachycarpus;* I feel pretty sure that the fruit also of the latter will prove to be winged.

I consider *Schizoglossum Wallacei* a near ally of *S. bidens* E. Mey.

24. **Krebsia carinata** Schltr., n. sp. Herba erecta, 20–35 cm. alta e basi parum ramosa; ramis flexuosis, subteretibus, unifariam velutinis basi glabrescentibus, dense foliatis; foliis erectis linearibus acutis utrinque glabris, basi in petiolum brevem angustatis, marginibus revolutis, 2–9 cm. longis, supra basin 0·2–0·5 cm. latis, petiolo vix 0·3 cm. longo; floribus in umbellis vel capitulis breviter pedunculatis vel sessilibus, extra-axillaribus alternantibus, pedicellis filiformibus divaricatis, 0·5 cm. longis, tenuissime puberulis; calycis segmentis erecto-patentibus lanceolatis acutis tenuiter pilosis, quam corolla duplo plusve brevioribus; corollæ lobis erectis apice marginibusque reflexis, ovato-oblongis subacutis, utrinque glabris, 0·4 cm. longis, medio vix 0·2 cm. latis; coronæ foliolis carnosis falcatis linearibus obtusis, dorso more generis carina longitudinaliter donatis, gynostegium paulo excedentibus; antheris subquadratis, marginibus cartilagineis alæformibus basi oblique truncatis loculos haud æquantibus, appendice hyalino brevi rotundato apice in stigma depresso, marginibus loculorum profunde excisis; polliniis more generis valde compressis oblique triangulis obtusis, caudiculis filiformibus basi incrassata glandulæ supra basin insertis, glandula rhomboidea, polliniis multo minori apice obtusiuscula; stigmate depresso.

In udis graminosis prope Kokstad, terræ Griqualand Orientalis, flor. Febr. 1883, alt. 5000 ped., *W. Tyson*, No. 1439; in saxosis prope flumen Umzimhlava, flor. Jan. 1895, alt. 4500 ped., *R. Schlechter*, No. 6548.

Although at one time I thought it better to unite Harvey's genus *Krebsia* with *Gomphocarpus* R. Br., I have already stated in another place (cf. *Engl. Bot. Jahrb.* vol. xx. Beibl. 51, pp. 39–40) my reasons for now keeping the genus distinct. It seems to me better to make a number of such small genera in orders as difficult as the Asclepiads, provided that anything like sufficient characters exist to distinguish them, than to unite everything under a mere handful of unwieldy genera.

The present species is the third of the genus; it comes nearest

to *K. stenoglossa* Schltr., described in this Journal for 1894 (p. 257) under *Gomphocarpus*. *K. carinata* was first discovered by Mr. Tyson on grassy places near the village of Kokstadt, in Griqualand East, in 1883. During my last trip through the same regions I was also lucky enough to find this species. This instance may show again how local some of our South African Asclepiads are.

25. **Gomphocarpus concinnus** Schltr., n. sp. Gracilis, erectus, 30–35 cm. altus; caule simplici, flexuoso, sparsim foliato, piloso; foliis erectis anguste linearibus acutis, marginibus revolutis, basi in petiolum brevissimum angustatis, utrinque pilosis, 5–8 cm. longis, medio 0·2–0·3 cm. latis, internodia subæquantibus vel paulo superantibus; floribus in umbellis extra-axillaribus alternantibus pseudo-terminalibusve, 6–8-floris, pedunculo erecto gracili, tereti, piloso, c. 1·5 cm. longo, pedicellis filiformibus pilosis, quam pedunculus duplo brevioribus; calycis segmentis lanceolatis acutis pilosis, quam corolla duplo brevioribus; corolla patula, 1·2 cm. diametro, lobis ovatis obtusiusculis sericeo-pilosis, marginibus sericeo-villosis, 0·6 cm. longis, medio vix 0·4 cm. latis; coronæ foliolis erectis cucullatis obtusis, facie interiore, margine supra medium utrinque denticulo porrecto in stigma inflexo auctis, apice oblique truncatis, gynostegium paulo excedentibus; antheris oblongis, marginibus loculorum basin versus dilatatis obtuse truncatis, loculos longitudine æquantibus, appendice hyalino suborbiculari rotundato apice in stigma inflexo, marginibus loculorum excisis; polliniis more generis maxime compressis oblique lanceolatis, basi in caudiculam brevem basi paulo dilatata glandulæ infra medium insertam angustatis, glandula rhomboidea obtusa pro magnitudine polliniorum minima.

In graminosis prope flumen Tina River in terra Griqualand Orientalis, alt. 4000 ped., flor. Jan. 1895, *R. Schlechter*, No. 6418; Nataliæ interioris loco incerto, *J. M. Wood*.

A very slender and distinct plant, very unlike anything we know of the genus on the African continent. It may be sectionally allied to such species of *Eu-Gomphocarpus* as *G. fruticosus* R. Br., *physocarpus* E. Mey., *tomentosus* Burch., *abyssinicus* Dcne., *sinaicus* Boiss., *stenophyllus* Oliv., and *rivularis* Schltr.; but from all these it differs by its habit, small size, and distinct corona-scales, and, if this may be regarded as a character of the section, the silk-like white hairs which cover the plant. All the species of my section *Eu-Gomphocarpus* are either glabrous or farinoso-tomentose. The fruits of *G. concinnus* are not yet known, and may prove to be quite distinct from those of *Eu-Gomphocarpus*. I have only seen a single specimen in each of the two collections mentioned above.

The colour of the petals is white, of the corona greenish brown.

26. GOMPHOCARPUS HARVEYANUS Schltr. Herba humilis e basi ramosa, 15–20 cm. alta; ramis subteretibus bifariam pilosis, basi glabrescentibus plus minus dense foliatis; foliis ovatis vel ovato-lanceolatis acutis vel subacutis utrinque tenuiter pilosis, supra basin 0·7–1·3 cm. latis, 1·5–3 cm. longis, petiolis pilosis, 0·4–0·6 cm. longis; floribus in cymis umbellæ-formibus terminalibus multifloris, pedunculo folia superante erecto bifariam piloso, 2·5–3·5 cm.

longo, pedicellis filiformibus pilosis, 0·7–1 cm. longis; calycis segmentis lanceolatis acutis pilosis, quam corolla duplo brevioribus; corolla subrotata, 0·6 cm. diametro, lobis ovato-oblongis obtusis utrinque glabris; marginibus apicem versus sæpius reflexis, 0·4 cm. longis, medio 0·2 cm. latis; coronæ foliolis erectis more sectionis (*Pachyacris*) carnosis, obtusis, gynostegium paulo superantibus; antheris oblongis, marginibus cartilagineis basin versus alæformi-dilatatis loculos vix superantibus, appendice hyalino suborbiculari apice in stigma inflexo, marginibus loculorum ad medium usque incisis, polliniis valde compressis oblanceolatis, obtusis, caudiculis divaricatis filiformibus brevibus, glandulæ juxta basin affixis, glandula anguste oblonga apice obtusa pro magnitudine polliniorum satis magna. (*Xysmalobium pedunculatum* Harv. *Thes. Cap.* vol. ii. p. 8, t. 112 (1863).)

In convalle montis Winterberg, in terra British Kaffraria, *Mrs. Barber;* in clivis montis Katberg, alt. 5000–5300 ped., flor. Dec. 1892, *E. E. Galpin*, No. 1731.

This plant was described by Harvey as *Xysmalobium pedunculatum*. It belongs to my section *Pachyacris*, which is characterized by the habit and the thick fleshy corona-scales (without appendages, but sometimes with a thickened tip); the fruit of the species belonging to this section is fusiform (not inflated, as in section *Xysmalobium*), and without appendages, but sometimes thinly tomentose (or glabrescent).

In the characters of the flowers our plant has most affinity with *G. parviflorus* Schltr. and *G. pachyglossus* Schltr., but both of them have lateral inflorescences, besides a good many floral characters, which justify their separation from *G. Harveyanus*. *G. Tysonianus* Schltr. in *Journ. Bot.* ined., with a terminal inflorescence, may easily be distinguished by its smaller subcapitate yellow flowers and its floral structure. The beautifully-dried specimens of Mr. Galpin show white flowers with purple-brownish tips outside, and yellow corona-scales. They agree exactly with my type specimens from Mrs. Barber's collections.

27. **Cynanchum schistoglossum** Schltr., n. sp. Planta volubilis, alte scandens, ramosa; ramis teretibus tenuissime pilosis vel subglabris, plus minus dense foliatis; foliis patentibus ovatis vel lanceolato-ovatis acutis vel acuminatis, basi cordatis vel subhastato-cordatis, integris utrinque glabris, 4–6 cm. longis, infra medium 1·7–3·5 cm. latis, pedunculo 1·8–2·5 cm. longo; floribus in cymis extra-axillaribus alternantibus vel rarius oppositis subumbellatis vel breviter racemosis, pedunculo erecto tenuissime puberulo petiolum longitudine æquante, pedicellis erectis vel patentibus filiformibus tenuissime puberulis inæquilongis (0·5–0·8 cm. longis); floribus virescentibus pro genere minoribus, calycis segmentis ovato-lanceolatis, lanceolatisve subacutis, tenuiter puberulis quam corolla plus quam duplo brevioribus; corolla subrotata, 0·4 cm. diametro, lobis ovato-lanceolatis obtusis utrinque glabris, vix 0·3 cm. longis, medio vix 0·2 cm. latis; coronæ foliolis in tubum brevem subcylindricum altius connatis, apicibus liberis subtriangularibus obtuse acuminatis apice bifidis, segmentis subacutis, intus nudis,

gynostegio subæquilongis; antheris oblongis, marginibus cartilagineis, angustis (tamen bene conspicuis), loculos vix æquantibus, appendice hyalino ovato obtuso apice in stigma inflexo, marginibus loculorum rotundato-emarginatis; polliniis oblongis utrinque obtusis, minime compressis, caudiculis brevissimis divaricatis, basi angustata glandulæ juxta basin insertis, glandula oblonga obtusa, quam pollinia multo minori.

Inter frutices scandens prope Phœnix, et prope Avoca, Aug. 1893 (fructifera), et Apr. 1895 (florifera), alt. c. 150 ped., *R. Schlechter*, No. 7090.

Amongst the South African species of *Cynanchum* the present species has hardly any affinity. The structure of the corona-scales is rather remarkable, and perhaps best to be compared with that of *C. obtusifolium* L. fil., but without any appendages or lamellæ on the inner side, and the tip of the scales always bifid, as in some *Schizoglossum*. This latter character does also occur in *C. obtusifolium*, but it is there by no means constant.

The first I saw of this plant were fruiting specimens on a rather swampy place near Phœnix, on the coast of Natal north of Durban, and a few weeks later near Avoca, a few miles further south, in September, 1893. After leaving the Natal coast the following August, I never succeeded in finding it again during all my travels in Eastern South Africa, till in April, 1895, I arrived again in Durban to prepare for my return to Europe. I then thought it worth while to go to the above-named localities to try to get specimens with flowers, and, together with Mr. Wood and Mr. Evans, of Natal, I succeeded in getting good flowering specimens, which enabled me to describe the plant.

The flowers are rather small, with green petals and a white corona.

28. **Riocreuxia polyantha** Schltr., n. sp. Volubilis, alte scandens, glaberrima, valde ramosa; ramis filiformibus distanter foliatis; foliis patentibus graciliter petiolatis ovatis attenuato-acutis vel acuminatis glabris, basi profundius reniformi-cordatis, 5–7 cm. longis, supra basin 2·4–5 cm. latis, petiolo 2–5 cm. longo; floribus in cymis extra-axillaribus alternantibus laxe racemosis, multifloris, pedicellis gracillimis filiformibus, 1·7–2 cm. longis; calycis segmentis lineari-lanceolatis acutissimis glabris, 0·3 cm. longis, corollæ tubo subcylindrico basi paulo attenuato, glaberrimo, 1·2 cm. longo, medio 0·3 cm. diametro, lobis lineari-elongatis apice cohærentibus utrinque glabris, vix 0·9 cm. longis; coronæ foliolis; cum basi foliolorum interiorum in annulum brevem connatis, apicibus liberis 10 brevissimis dentiformibus acutis, erecto-patentibus, coronæ interioris foliolis erectis lineari-ligulatis obtusis multo exteriora superantibus, gynostegium æquantibus, apice in stigma inflexis; polliniis pyriformibus obtusis, vix compressis, caudiculis divaricatis brevissimis, glandulæ minimæ rhomboideæ obtusa basi affixis; stigmate generis.

In fruticetis juxta flumen Bashee, in terra Transkei appellata, alt. 2500 ped., florens Jan. 1895, *R. Schlechter*, No. 6291.

This is evidently one of the species of *Riocreuxia* which were

wrongly called in the South African as well as in the European collections *R. torulosa* Dcne., from which, however, it is quite distinct. It is very easily recognized by the lax racemose inflorescence, which is much larger than in *R. torulosa;* the flowers are much narrower in proportion to their length, and the corona is quite distinct.

It is possible that there are still one or two more species mixed with *R. torulosa;* at present I have not been able to make up my mind about one of them, whether to regard it as a species or merely as a variety. The present species, which is doubtless quite distinct from anything else in the genus, is at present only known to me from the locality given above, but I feel sure that it will be found to occur in many more localities.

29. **Ceropegia crassifolia** Schltr., n. sp. Herba carnosa volubilis, subsimplex vel parum ramosa; caule tereti glaberrimo basi parum dense deinde remote foliato; foliis patentibus patulisve, valde carnosis, lineari-lanceolatis vel linearibus acutiusculis brevissime petiolatis vel subsessilibus, 4–10 cm. longis, medio 6–1·5 cm. latis; floribus in cymis subaxillaribus alternantibus paucifloris, pedunculo suberecto vel patenti quam folia breviore, pedicellis brevibus erectis, teretibus glabris, 0·5–0·7 cm. longis; floribus pro genere majoribus erectis; calycis segmentis linearibus acutis glabris, 0·4–0·5 cm. longis; corollæ tubo e basi inflata (1 cm. diametro) medio angustato (0·5 cm. diametro), apicem versus paulo ampliato (0·8 cm. diametro), glabro 3·2 cm. longo, lobis ovatis conduplicatis, apice cohærentibus extus glabris, intus tenuiter pilosis.

Inter frutices scandens in aridis prope Kingwilliamstown, alt. 1500 ped., flor. Jan. 1893, *T. R. Sim*, No. 312.

Unfortunately the specimens which I got of this species have been boiled so much that it is impossible to get a view of the inner side of the corolla, the corona, and gynostegium. It is distinguished by the long very fleshy leaves, and the rather large flowers, which resemble somewhat those of *C. radicans* (cf. *Engl. Bot. Jahrb.* vol. xviii. Beibl. 45, p. 12), but are a little smaller, and very likely differently coloured.

30. **Ceropegia mozambicensis** Schltr., n. sp. Herba erecta, volubilis, simplex vel parum ramosa, glaberrima; caule tereti remote foliato; foliis carnosiusculis patentibus patulisve lanceolatis acutis acuminatisve, marginibus tenuissime (subinconspicue) denticulatis, 3·5–6 cm. longis, infra medium 1·4–2·6 cm. latis, petiolo 1–1·4 cm. longo; floribus extra-axillaribus alternantibus singulis, rarius binis, pedunculo patenti subtereti glaberrimo, c. 0·6 cm. longo, pedicello erecto pedunculum longitudine æquante tereti glaberrimo; floribus satis magnis speciosis, calycis segmentis anguste linearibus acutissimis erecto-patentibus glaberrimis, vix 0·3 cm. longis; corolla erecta, 3 cm. longa, tubo basi inflato (0·6 cm. diametro, 0·8 cm. longo), deinde subito paulo constricto, iterum inflato (0·7 cm. diametro), sensim medium versus angustato (0·4 cm. diametro), apicem versus ampliato, faucibus latissimis (1·2 cm. diametro), lobis late ovalibus conduplicatis apicibus

depressis cohærentibus, marginibus niveo-ciliolatis; "coronæ exterioris" (sic injuste appellatæ) foliolis in tubum brevem cupuliformem truncatum connatis, gynostegium vix æquantibus, coronæ interioris foliolis (rectius "coronæ exterioris lobis medianis") erectis anguste lineari-ligulatis acutis, apice inflexis, gynostegium plus quam duplo excedentibus glabris; polliniis oblique ovoideo-oblongis obtusissimis, caudiculis brevissimis divaricatis, glandulæ infra medium insertis, glandula minima rhomboidea obtusa; stigmate generis.

Inter frutices scandens prope ostium fluminis "Pungwe," in provincia Mozambique, flor. Apr. 1895, *R. Schlechter*, No. 7106; in fruticetis litoralibus insulis Mombassa, *W. E. Taylor*, 1895.

A very remarkable feature in our plant is the tube of the corolla, which is inflated at the bottom, then suddenly drawn together and again inflated, then again gradually drawn together, and at last gradually widened towards its mouth. I collected this species during my journey home at the mouth of the Pungwe River, in the Portuguese colony Mozambique, south of the Zambesi.

(To be continued.)

SOME NEW BRITISH MARINE ALGÆ.

By E. A. L. Batters, B.A., LL.B., F.L.S.

Several species have been added to the number of British Marine Algæ during the last twelve months, and the following list of the new British *Chlorophyceæ* and *Phæophyceæ* will, I trust, prove of interest. I hope to be able to give a list of the new *Florideæ* in an early number of this Journal.

Chlorophyceæ.

Ochlochæte ferox Huber, *Ann. Sc. Nat.* ser. 7, vol. xvi. Bot. p. 292, pl. x. I detected a few specimens of this interesting little plant on some specimens of *Chætomorpha linum* which I gathered at Cumbrae in August, 1891, and preserved in a saturated solution of salt for future examination.

Ulvella confluens Rosenv. *Groenlands Havalg.* p. 924, fig. 39. Weymouth, on the fronds of *Laminaria saccharina*, April, 1892, *E. A. B.*; April, 1895, *E. M. Holmes*. Dr. Rosenvinge has kindly examined my specimens of this species, and he assures me that they perfectly agree with the thinner specimens from Greenland, but the sporangia are slightly narrower in the British plant.

U. fucicola Rosenv. *Groenl. Havalg.* p. 926, fig. 40. Heswall, Cheshire, and Berwick, on *Fucus vesiculosus* and *F. platycarpus*, *E. A. B.* My Heswall specimens of this species are not quite characteristic, as the fronds are mostly superficial, and hardly penetrate the host-plant, but in all other respects they agree well with Dr. Rosenvinge's figures and description of this species. Dr. Rosenvinge has examined my specimens of this species also, and confirms my identification.

Acrochæte parasitica Oltmanns, *Bot. Zeit.* Dec. 16th, 1894. Berwick-on-Tweed, on *Fuci,* May and June, 1895. On examining some *Fuci* sent from Berwick by my brother James, I was pleased to find several of them were attacked by this parasite. I have since found the plant is not uncommon at Berwick, and most probably at many other stations on our northern coast. My specimens agree well with Oltmanns's description and figures.

Blastophysa rhizopus Rke. *Algenfl. der Westl. Ostsee*, p. 87; *Atlas D. Meer.* pl. 23. Cumbrae and Yarmouth, in *Enteromorpha compressa, E.A.B.* My specimens of this species agree fairly well with Huber's figures (*Ann. Sc. Nat.* ser. 7, vol. 16, pl. xvii.) of this plant, but are not so large as the specimens figured by Reinke.

Endoderma leptochæte Huber, *Ann. Sc. Nat.* ser. 7, vol. xvi. Bot. p. 319, pl. xv. figs. 1–9. Mr. Buffham has kindly sent me some good specimens of this plant in the cell-walls of *Ectocarpus penicillatus* gathered at Teignmouth in August, 1893.

Tellamia intricata Batt. *Ann. Bot.* ix. p. 168, March, 1895. Weymouth; Padstow.

T. contorta Batt. *l. c.* Weymouth; Cumbrae; Berwick; Padstow. In the June number of the *Annals of Botany* I have given a full description of these two interesting plants, which differ from all other known algæ in attacking the periostracum of shells. This membrane, so far as I am aware, resists the attack of all other perforating algæ, and thus protects the chalky portions of the shell from their disintegrating action.

PHÆOPHYCEÆ.

Scytosiphon pygmæus Rke. *Algenfl. der Westl. Ostsee*, p. 60; *Atlas D. Meer.* pl. 14. Weymouth, April, 1892, *E.A.B.*

Buffhamia speciosa Batt. *Ann. Bot.* ix. p. 168, & pp. 307–311. Weymouth, *E.A.B.*

Ulonema rhizophorum Foslie, *New Norweg. Alg.* p. 19, pl. iii. figs. 11–17. On *Dumontia filiformis*, Berwick-on-Tweed; not uncommon, *E.A.B.* Probably common all round our coast.

Gobia baltica Rke. *Algenfl.* p. 65. Dunbar, *E.A.B.* In most respects this plant resembles *Dictyosiphon Mesogloia*, but the cortical layer of fertile specimens is composed of numerous simple 2–3-celled, clavate or cylindrical filaments, between which the sporangia are borne.

Mesogloia Leveillei Menegh. *Alghe Ital.* p. 283, pl. 5. Guernsey. I am indebted to Mr. E. M. Holmes for a portion of a specimen of this species gathered in Guernsey in the autumn of 1894.

Lithoderma fatiscens Aresch. *Obs.* iii. p. 23; *Hauck. Meeresalg.* fig. 177, p. 403. Cumbrae, on a shell dredged from 8–10 fathom-water, *E.A.B.*

Symphyocarpus strangulans Rosenv. *Groenl. Havalg.* p. 896, figs. 28 & 29. Berwick-on-Tweed, on shells and stones between tide-marks, rare, *E.A.B.*

Phæostroma pustulosum Kuckuck. *Schriften des Naturwissensch. Vereins für Schleswig-Holstein*, Band x. p. 43. On *Laminaria saccharina* var. *phyllitis*, and on old *Zostera* leaves. Cumbrae and Berwick, *E. A. B.*; Seaton, *T. H. Buffham*. Although my specimens agree well with the description of this species, I am a little uncertain as to their identity, as no figures of *Phæostroma* are given.

Streblonema volubile Thur. in Le Jol. *List Alg. Cherb.* p. 73. *Cylindrocarpus volubilis* Crouan, *Alg. Finist.* No. 11. *Ectocarpus volubilis* Crn. *Flor. Finist.* p. 161. On *Dudresnaya coccinea*, Studland, *Mrs. Gray*; and Sidmouth, *Mrs. Moseley* (Herb. Brit. Mus.); Torquay, *Mrs. Griffiths* (Herb. Linn. Soc.); Swanage, *E. A. B.* In *Gloeosiphonia capillaris*, Teignmouth, *T. H. Buffham*. In August, 1894, I was fortunate enough to detect this very interesting little plant on some fine specimens of *Dudresnaya coccinea* which I had found at Swanage, in Dorsetshire; since then I have examined all the specimens of the host-plant in the Herbaria of the British Museum and the Linnean Society, and in several cases have found them more or less attacked by this species of *Streblonema*. Mr. T. H. Buffham has sent me some beautiful slides of a *Streblonema* with plurilocular sporangia, which he found in *Gloeosiphonia capillaris* at Teignmouth in August, 1892. The habit of the plant and its vegetative portions are so like those of *S. volubile* that I venture to think Mr. Buffham's plant may be the sexual form of that species. The plurilocular sporangia vary in shape from roundish or oval to spindle-shaped, and from 20 to 75 μ in length, while they are usually from 18 to 21 μ wide in the broadest part.

Ectocarpus clandestinus Sauvageau, *Journal de Botanique*, tom. vi. 1892. *Elachista clandestina* Crouan, *Flor. Finist.* p. 160, pl. 24, fig. 157, 1–2. On *Fucus vesiculosus*, *F. serratus*, and *F. ceranoides*, &c., Berwick-on-Tweed, *E. A. B.* This very interesting little plant is not uncommon at Berwick. I first detected it on some specimens of *F. ceranoides* gathered by my brother in May last, but have since found it in abundance on several species of *Fuci*. The fronds are at first formed beneath the cortical layer of the host-plant, and break through it in the manner of an *Æcidium*. M. C. Sauvageau has very kindly compared my plant with the original specimen gathered by the brothers Crouan, and now preserved in the Paris Museum, and he assures me that the two plants perfectly agree.

E. æcidioides Rosenv. *Groenl. Havalg.* p. 894, fig. 27. On *Laminaria saccharina* var. *phyllitis*, Cumbrae; and Berwick-on-Tweed, *E. A. B.*; Filey, *E. M. Holmes*; Seaton, com. *T. H. Buffham*.

E. dasycarpus Kuckuck, *Bot. Centralbl.* 1891, Heft. 40–44 (reprint, p. 21). Swanage, on *Cutleria multifida*, August, 1887, *T. H. Buffham*; on *Chorda filum*, 1894, *E. A. B.*

E. Reinboldii Rke. *Atlas Deutsch. Meeresalg.* pl. 41. At a recent meeting of the Linnean Society, Mr. E. M. Holmes showed some beautiful specimens of this species from Weymouth. I understand that they were gathered by Mrs. Holmes, a lady who has already added more than one species to the British Marine Flora, and who by her example has done much to revive an interest in British seaweeds.

Myriotrichia densa Batt. *Ann. Bot.* ix. pp. 168 & 311. Swanage, *T. H. Buffham*; Cumbrae and Weymouth, *E. A. B.*; Arran, *Miss Barton*.

MR. SCOTT ELLIOT'S TROPICAL AFRICAN ORCHIDS.

By A. B. Rendle, M.A., F.L.S.

(Continued from p. 252.)

Derœmeria acuminata Rendle & Schlechter, sp. nov. Semipedalis, anthesi aphylla glabra, scapo squamis triangulari-acutis bracteiformibus instructo; racemo subsecundo 14-floro; sepalis uninerviis, dorsali ovato mucronato, lateralibus ovato-lanceolatis obtusis vix mucronulatis; petalis ovalibus superne autem oblique 3-fidis, lobo medio longiori; labelli basi cymbiformi auriculata ad columnam alte affixa et in calcar rectum producta, parte superiori subpatente et trilobulo, lobo medio longiore acuto.

Hab. Dry burnt ground, Nandi, Nile watershed, 6–7000 ft., Jan. (between the rains), 1893, No. 7049. Schimper, *Fl. Abyss.* No. 790. Auf Berg Edda Girges, 7000 ft., über Meer, bei Adum, 24 Januar. 1863.

A slender leafless plant, resembling in habit *Derœmeria aphylla* Schlechter & Rendle (*Holothrix aphylla* Rchb. f.), collected by Forskahl in Arabia Felix. The acute lanceolate flowering bracts (1½ lines long) are about half the length of the shortly-stalked ovary (3–4 lines long). The dorsal sepal is 1½ lines by ⅔ line broad, the laterals slightly smaller (1¼ by less than ⅔); the petals are 2½ lines by 1 line, the lateral lobes shorter and more obtuse, the median elongated and acute. The round basket-shaped base of the lip forms with the column a tube in which the stigma is sunk, the column projecting only a short way above the point of union; the lateral lobes of the spreading upper part are broad, and shortly pointed on the side next the longer acute central lobe; from the tip of the latter to the beginning of the spur is 2⅓ lines; the upper portion is a little over 1½ lines broad, and the spur is 2½ lines long. The anther-canals are short and truncate.

Distinguished from *D. aphylla* by its divided lip (entire in Forskahl's plant) and straight (not curled) spur. Is also near *H. Schimperi* Rchb. f., but distinguished (e descript.) by the broader sepals and petals, the latter being ligulate in the Abyssinian plant; the bracts are moreover only about half the length of the ovary (not subequal to it), and the spur is straight (not arcuate). Also differs from the allied *H. præcox* Rchb. f. in its shorter floral bracts, and shape of sepals and petals, the latter of which are never elongated into threads.

In discussing this plant with Mr. Schlechter, who contemplates a monograph of *Holothrix*, he pointed out that it differs, like its allies *H. aphylla*, *H. præcox*, and one or two more, very strikingly in habit from the other species of the genus, in all of which we find an ebracteate hairy scape springing from between the radical leaves. He suggested that if the floral characters were sufficiently distinct, it would be well to revive Reichenbach's genus *Derœmeria* for the reception of these few species. We accordingly examined the flowers, and found them characterized by the very high union of the auricled labellum to the column, the stigma being sunk in the tube thus formed. The column was also different in appearance from that of a true *Holothrix*. It was accordingly deemed advisable to restore *Deroemeria* on these characters of the lip and column, together with the marked habit already mentioned.

Holothrix (TRYPHIA) **puberula**, sp. nov. Scapo inter folia 2 late ovata orto puberulo superne racemum spiralem 10-florum formante, bracteis ovatis acutis vix aristatis dorso carinatis, ovario pæne sessili brevioribus; sepalis petalisque 1-nerviis acutis, illis ovatis, lateralibus antice obliquis, his angustioribus, labello basi saccato cum calcare brevi tenui sursum curvato, lamina longa spathulata integra, parte inferiori tomentosa.

Hab. Ukambane, Masai Highlands, 5–6000 ft., Dec. (between the rains), 1893, No. 6486.

About 4 in. high, the subobtuse radical leaves 10 lines long, 11 and 14 lines broad. The raceme of subpatent flowers is 1½ in. long, with bracts 2–2½ lines. The dorsal sepal is 1 line long and nearly ⅔ broad, the lateral are longer (1¾ lines) and as broad, overlapping the base of the lip in front. The petals are attached to the saccate base of the lip and the column, and overtop the sepals by ½ line. The very slender strongly upcurved spur is 1¼ lines long, the ascending spreading limb 3 lines long by 1¼ broad above; on the upper surface, in its lower half it bears a short tomentum. The anther-canals are short.

Approaches nearest to the Natal species *H. orthoceras* Rchb. f., which has an elongated lip-lamina, but the latter is 5-fid, not entire. The attachment of the petals to the sides of the labellum and the column is of interest from the following note in the *Genera Plantarum* on *Tryphia* (iii. 624):—"Petalis ex Lindleyo labello adnatis, quod tamen nec in icone Harveiana delineatur, nec in floribus examinatis invenimus."

Habenaria culicifera, sp. nov. Glabra, caulis parte inferiore foliosa, foliis e basi vaginante linearibus superne angustatis; racemo multifloro, bracteis lanceolatis acutis, ovarium haud æquantibus; floribus inter mediocres, sepalis reflexis, dorsali ovali obtuso quam lateralia oblique obovata apiculo juxtaposita multo minori; petalis bipartitis parte postica lineari-filiformi, antica ligulata multo majore; labelli usque ad basin tripartiti segmentis anguste linearibus medio longiore, calcare inferne clavato quam ovarium cum pedicello sublongiore; processubus stigmaticis longis porrectis capitatis, antheræ canalibus apice incurvis brevioribus.

Hab. Hillsides, Ruwenzori, 6000 ft., No. 7854.

The erect smooth slender stem is 16 in. high; the narrow tapering leaves reach nearly 6 in. in length, with a breadth of less than ½ in. The raceme is 6 in. long. The thin membranous flower-bracts are 6–7 lines long, the ovary and stalk nearly ¾ in. The small dorsal sepal is 3-nerved, and 2½ lines long by a little over 1 broad; the wing-like lateral sepals have two additional nerves closely following the margin, and are 3½ by 2 lines; the blunt anterior segment of the petal is 4⅓ lines long by little over 1 broad; the filiform posterior segments are 2½ lines long. The central lobe of the lip is 5 lines long, the lateral ones 4 lines. The prominent stigmatic processes are 2 lines long.

A member of Kränzlin's section *Replicatæ*, and closely allied to the Abyssinian species *H. pedicellaris* Rchb. f., from which, however, it is easily distinguished by the parallel-sided and not triangular anterior division of the petal. From the nearly allied *H. Ndiana* Rendle (Ndi Mts.) it is also distinguished by the shape of this member, as well as by its much longer stigmatic processes, which exceed the anther-canals.

Habenaria ingrata, sp. nov. Caule inferne folioso, superne bracteato, bracteis lanceolatis acutis-acuminatis, florentibus ovarium haud æquantibus; floribus mediocribus, sepalis reflexis dorsali ovali, lateralibus majoribus oblique ovatis apice juxtapositis, petalorum parte antica subulato-lanceolata, postica brevi filiformi, labelli segmento medio tenuiter lineari, lateralia anguste lineari-lanceolata parvo excedente, calcare lineari flexuoso quam ovarium cum pedicello sublongiore; processubus stigmaticis brevibus capitatis rectis, antheræ canales tenues vix æquantibus.

Hab. Ruwenzori, 9000 ft., May (greater rains), 1894, No. 7198 pars.

A glabrous plant 16 in. high, the lower part of the rather thin stem covered with the membranous persistent leaf-sheaths, to which are still attached the withered bases of the apparently linear leaves. The thin light-brown membranous flowering-bracts are 6–7 lines long, reaching about half-way up the ovary. The rather dense raceme is 4 in. long. The obtuse dorsal sepal is 2 lines by 1, the laterals are 3 by 1⅔. The anterior petal-segment is 3½ lines long by ¾ line broad above the base, the posterior segments are 2 lines long; the median lip-segment is 4 lines, the lateral ones 3½ lines; the uniform spur is 10–11 lines long. The stout stigmatic processes are 1 line long; the ovary (⅓ in.) is sharply distinguished from its stalk (½ in.).

Closely allied to *H. pedicellaris*, but distinguished by its more shortly-stalked slightly smaller flowers, longer bracts, almost subulate anterior petal-segments, and much shorter stigmatic processes.

Habenaria genuflexa, sp. nov. Glabra, foliis lanceolatis acutis amplexicaulibus in bracteas transgredientibus; racemo sublaxo, floribus mediocribus, bracteis pedicellos longos haud æquantibus; sepalis reflexis dorsali concavo ovali-oblongo obtuso, lateralibus oblique orbiculari-ovatis apiculo juxtapositis; petalis bipartitis parte antica lineari-lanceolata subfalcata quam postica subulata plus duplo breviore, labello alte tripartito, segmento medio longo lineari basin prope angustato, quam laterales multo majore; calcare quam ovarium breviori geniculato, inter sepala lateralia incluso, supra basin vesicatam torto; processubus stigmaticis longis capitatis sursum arcuatis, antheræ canales tenues subæquantibus.

Hab. Wimi, Ruwenzori, eastern side, 7000 ft., June (rains), 1894, No. 7922.

The rather slender stem (1¾ ft. long) bears several leaves in its lower part which pass from a short sheath into an amplexicaul blade; these pass into lanceolate sheathing bracts which grade into the membranous acute floral bracts, the lower of which are 10 lines long. The slender pedicels (1 in.) are sharply distinguished from the narrow-oblong ovaries (5 lines). The dorsal sepal is 3½ by 1⅓ lines, the lateral are nearly 4 lines long by 3 broad. The posterior portions of the petals are equal in length to the dorsal sepal, and ½ line broad; the anterior portion (7½ lines long) tapers gradually from a base of ½ line broad to the pointed apex. The central lip-segment is ½ in. long, the narrower lateral ones 4½ lines. The short spur (4½ lines) is bent suddenly upwards above the middle, and has a spiral twist just above the bladder-like end. The prominent upwardly curving stigmatic processes are ¼ in. long.

Very near the Abyssinian *H. Schimperiana* Hochst., but distinguished by its very short sharply geniculate spur, shorter anterior perianth-segments and lip-lobes, and broader leaves. Also recalls *H. anaphysema* Rchb. f. in the sharply reflexed spur.

HABENARIA HUMILIOR Rchb. f. var. BREVICALCARATA, var. nov. Calcare breviori, processubus stigmaticis vix longioribus, foliis latioribus.

Hab. Tropical East Africa, Mau Forest, Sept. 1889, *F. J. Jackson.*

Type in Abyssinia.

Distinguished at once by its much shorter spur; it has also acuminate anterior petal-segments, and falcate lateral lip-segments.

Habenaria ruwenzoriensis, sp. nov. Caule valido folioso, racemi subdensi bracteis membranaceis quam ovaria cum pedicellis haud distinctis duplo brevioribus; floribus mediocribus, sepalo dorsali cucullato ovali, lateralibus reflexis cuneato-obovatis antice rotundatis, petalorum parte postica brevi late- vel oblongo-ligulata, apice subito acuta, parte antica æquilonga angustiore plus minus lanceolata subfalcata acuta; labelli tripartiti lobo medio lineari obtuso 3-nervio, lobis lateralibus omnino minoribus, calcare flexuoso vix filiformi sub apice dilatato, quam ovarium pedicellatum breviore; processubus stigmaticis porrectis tenuibus capitatis, antheræ canales apice incurvatas æquantibus, rostello dentiformi.

Hab. Wimi, Ruwenzori, 7000 ft., June (rains), 1894, No. 7923.

The stout fleshy stem is 30 in. high, including the raceme (9 in.). A rufescent basal sheath is succeeded by a number of oval-lanceolate leaf-blades (the largest 4½ in. by 1¼) spreading from an amplexicaul base, into which the sheath (1 in. long) gradually passes. Above the middle there is a gradual transition from the leaves to the lanceolate floral bracts (1 in. long in lower part of raceme, shorter above). The upper part of the plant is more or less pilose, especially on the upper surfaces of the bracts. The elongated almost clavate ovary, with its stalk, is ascending, and reaches 1½ in. in length. The dorsal sepal is 3 by 1½ lines, the reflexed lateral ones 4 by 3 lines; the perianth-segments (2 lines long) form a single piece at the base, the suberect posterior one is a little over 1 line broad, the anterior scarcely ½ line. The lip is 5½ lines long; the median lobe is much longer and broader (½ line) than the two lateral. The spur is 11 lines long. The slender capitate stigmatic processes are $2\frac{1}{2}$ lines long. The short and linear staminodia are bifid.

In habit closely resembles *H. ceratopetala* Rich. from Abyssinia, but has not the long anterior petal-segments of that species.

(To be continued.)

AMERICAN NOMENCLATURE.

Mr. J. McK. Cattell, "Responsible Editor of *Science*," sends us the following:—"On p. 213 you quote from a correspondent who, having stated that certain American journals 'will not accept articles which give a true account of what has been said against the American system in Berlin and Vienna,' continues: 'A notice stating the facts was sent to *Science*, and actually put in type, but the botanical editor suppressed it.' This is a serious charge, and I venture to ask you to insert this letter denying it. Your correspondent has been misinformed, as no article on the nomenclature question has been rejected by the botanical editor of *Science*. The only contribution presented to *Science* on this subject and not accepted was an account of an extemporary discussion (partly against and partly in favour of the proposed system) following the reading of a paper before the Biological Society of Washington. This discussion was considered by the undersigned not suitable in form for publication, but the speakers were invited to contribute a discussion of the subject to *Science*, and a paper by one of them, Mr. Erwin F. Smith, presenting views similar to those of your correspondent, was contributed by him in abstract and printed in the issue of May 24."

We have received a similar communication, which we have unfortunately temporarily mislaid, from the Editor of the *Botanical Gazette*, pointing out that articles opposing the neo-American nomenclature have appeared in that journal, and stating that the paper on the subject referred to in the extract we printed, was rejected by him on grounds altogether apart from the line of argument adopted. The Editor, however, in the number of the *Gazette* just to hand, publishes his justification in terms which are hardly free from the "personalities" to which he objects in his contribution; and this can be consulted by those who wish to pursue the subject further.

Meanwhile we have also received from its author, Mr. Erwin P. Smith, the paper to which allusion is made in the foregoing communications. We think it well to reprint Mr. Smith's prefatory note, as throwing further light on the history of the paper: to the essay itself, which is a trenchant criticism of the "Check List," we may, if space allows, return later. Those who are interested in the controversy as it is carried on in the States may probably be able to obtain a copy of the paper from the author, whose address is 1457, Stoughton Street, Washington, D. C.

"This paper was offered to the *Botanical Gazette*, passed through the hands of two of its editors, was accepted for publication, and announced to appear in the June number. Subsequently it was rejected unless I would submit to have it cut down *two-thirds.* A much briefer statement of the case was previously accepted by *Science*, and proof sent to me, after which it was rejected as too long and too personal. Evidently every effort is being made to limit adverse criticism, any of which smacks strongly of personality in the eyes of the faithful. Nevertheless, I shall venture to say what I desire without fear or favour, and if other American botanists who are opposed to the Brittonian school of nomenclature will do the same, we can compel a full and free discussion of this subject in our botanical journals, which is all that is required to damn it; and if the editors will not allow free discussion and even plain criticism on a topic as vital as this, then it is quite time we should have in this country a journal which will. Free discussion is the life of science, and the shrewd scheming and arbitrary methods of the ward politician have no place in American botany."

SHORT NOTES.

CORNWALL PLANTS.—Two or three examples of *Anchusa officinalis* occurred on the sands between Penzance and Marazion in July last. In the *New Botanist's Guide* Mr. Watson queries the record of St. Ives, quoted from *Mag. Nat. Hist.*, as being probably a slip of the pen for *A. sempervirens.* At Penzance the plant was probably introduced with ballast, as I found *Medicago falcata*, *M. sativa*, and *Hyoscyamus niger* in the vicinity. *Chenopodium murale* and *C. Vulvaria* also occurred. Near St. Michael's Mount *Stachys ambigua* was noticed, and a *Potentilla*, probably *P. reptans* × *Tormentilla*, was also seen.—G. C. DRUCE.

PLYMOUTH CASUALS.—When looking for *Linaria supina* on Cottesdown Quarries, I found several plants of the handsome and interesting *Lepidium perfoliatum*. *Melilotus arvensis*, *M. alba*, *Medicago falcata*, and *M. sativa* also occurred. Above the docks at Devonport I gathered *Sisymbrium pannonicum*, *Erysimum cheiranthoides*, *Bromus tectorum*, *B. arvensis*, *Apera Spica-Venti*, *Polypogon monspeliense*, *Stachys annua*, *Couringia perfoliata*, *Melilotus indica*, *Saponaria Vaccaria*, &c.—G. C. DRUCE.

JUNCUS TENUIS Willd. IN DEVON. — On August 24th last I met with several clumps of this rare rush, growing in a narrow flat strip of turf along a roadside, running not far from and parallel to the river Mole, in the parish of George Nympton, North Devon, at an altitude of about 200 ft. above sea-level.—W. P. HIERN.

CAREX NOTES.—*C. fusca* All. (the *C. Buxbaumii* Wahl. of our Floras) has been sent me by Mr. W. F. Miller from the district of Arisaig, W. Inverness, where it occurs in some abundance around a loch, growing with many other *Carices*, *Eriophori*, *Scirpus Tabernæmontani*, &c. Among some Carices sent me in 1884 by Mr. J. Percival from near Carperly, in Bedale, Yorkshire, I find specimens of *C. cæspitosa* L. Fr., a name which will be found in our old Floras, but there representing either *stricta*, *acuta*, or *Goodenovii*. Mr. Duncan has sent me from the Outer Hebrides a very puzzling *Carex*, having much the facies of the *acuminata* (Willd.) form of *C. glauca* Scop. (*C. flacca* Schreb.), but with two stigmas, and otherwise in some degrees combining the *vulgaris*, *aquatilis*, and *salina* sections of the genus. At present I am unable to give it a certain name; I hope to get living specimens.—ARTHUR BENNETT.

NEW STAFFORDSHIRE PLANTS.—I have lately found *Elatine Hydropiper* somewhat sparingly on the mud of a large pool near Cannock Chase; it was abnormally small, but, as there were one or two flowers well expanded and some well-matured capsules, I was able to identify it readily. The petals were a beautiful pale rose-colour; stamens 8; capsules sessile, containing a few ovules curled like a horse-shoe, with unequal sides; the plant formed small coral-like tufts. The mud was too treacherous to allow me to venture near the water, so that I was not able to see whether the plant was growing in the pool, but I hope to visit the locality again for this purpose. I may also mention that last year I found a very abundant growth of *Stellaria nemorum* on the banks of the River Churnet, near Alton Towers, and sent a few specimens to the Botanical Exchange Club as a record. I believe neither of these plants has been recorded for Staffordshire before.—J. E. BAGNALL.

RICCIA GLAUCESCENS IN IRELAND. — This hepatic, which does not appear to have been hitherto recorded from Ireland, was sent to me in small quantity by my friend the Rev. S. A. Brenan, in July of this year, from Co. Antrim. The specimen was freshly gathered, and has since been submitted to and named as above by Messrs. Pearson and Holt. On the 14th of August I visited Cushendur, in Co. Antrim, where Mr. Brenan resides, and had the pleasure in his company of seeing two small patches of the plant growing on low rocks in the river that flows through Glendun; and, I may add, we took care not to exterminate it.—H. W. LETT.

NOTICES OF BOOKS.

A Manual of Botany. By J. REYNOLDS GREEN, F.R.S., &c. Vol. I. Morphology and Anatomy. London: J. & A. Churchill. 1895. 8vo, pp. x, 398; figs. 778. Price 7s. 6d.

PROF. GREEN has written this book in the excellent way expected of him, in spite of the drawback that he had to base it on an earlier manual, that of the late Prof. Bentley. The advantage to publishers of retaining the semblance of a well-known favourite while employing a botanist of the younger generation to transform the old book is plain enough, but it is not fair either to the new author or to the public. The new wine has again been poured into the old bottle. "The chapters on Morphology have been altered only so far as has been necessary in order to incorporate in them the modifications of the older views which are based upon recent scientific investigations. . . . The subject of the anatomy of plants has been separated from that of morphology and made a separate section. This has been almost entirely rewritten," &c. In short, Prof. Green has not only had to build afresh, but to pull down the old structure, and to take great care that parts of it came not about his ears. There was no doubt of his ability to write an admirable new book, and he is to be congratulated now on the greater power of transforming an old one with many faults into a new one with many virtues. Every part of it bears the mark of cautiously weighed opinion, every fact is stated crisply and clearly. The student who purchases the book may depend on thorough accuracy, and need fear no examining foe with the contents of this book secure in his memory. The botanical public have little idea of the number of utterly shameless text-books that circulate among medical, veterinary, and pharmaceutical students—books packed full of gross inaccuracy, written for cramming purposes, sold for small sums, and brought into the world purely for piratical purposes. These books and their authors are quite unknown to the botanical world, but are only too familiar to every teacher of botany in our colleges who sees them circulate in his class. I have seen students over and over again purchase their "Oliver," and carry it with one of these pirate books throughout the course, absorbing the astounding errors of the latter with an appetite that leaves no room for the wholesome fare of the former. At examinations it is a common observation that the errors of the pirate are retained in the memory, when all else is a blank. What is the fascination? The pirate is not amusing,—to the elementary student at least,—his style is bleak, and his "facts" are rocky. He exists, I fancy, because he is sternly forbidden. If there were no law of libel to protect him, it would be a public service to collect all these books and review them at once—put them into the pillory. I suggest to the Editor that he devote a Christmas number to a brief Manual of Botany consisting of the errors of these books woven together, with the authors' names appended.

I have made this digression to show better the value of this work of Professor Green. It will take the place, I hope, of many worthless books. Dr. Scott's *Structural Botany*, in combination with Prof. Oliver's *Lessons*, displaced many, and I trust this *Manual* will also slay its thousands. There is a tendency towards too much "Kernerism," if I may be excused the word, in some elementary books. The admirable book I allude to is for reading by the general cultivated public; the more severe Manual is meant for students who get their Kerner or its equivalent in lectures and class-rooms. Prof. Green is, however, perhaps too formal, if anything, on the whole, and he nowhere forgets for a moment that learning Botany is a serious business. I ascribe this, if it be a fault at all, to the basis of the *Manual* on the older Bentley, which was a portentously dull book; it is the clinging flavour of the old bottle, burst though it be. This is a thoroughly honest and wholly good piece of work, and deserves the wide circulation I heartily wish it.

G. M.

Les Champignons considérés dans leurs rapports avec la Médicine, &c. Par le Dr. Lucien-Marie Gautier. 8vo, 508 pp., 16 coloured plates, 195 figures. Price 18 fr. Paris: J. B. Baillière et fils.

This volume is a reissue of a similar edition published in 1883. It is scarcely intended for students, but has for aim to help non-scientific people to recognize easily those species of fungi that are edible, as well as those that are distinctly poisonous, enabling them thus to avail themselves of an abundant though little-appreciated food-supply, and to avoid the dangers accruing from the eating of poisonous forms. The author, a country physician, recounts how one day a peasant asked him if certain mushrooms he had been collecting were edible; he confidently answered that all fungi were poisonous, whereupon his interrogator informed him that he had eaten just such mushrooms for twenty years, and would still continue to do so. Dr. Gautier was induced by this incident to take up the study of this branch of Botany, and became in time an enthusiastic mycologist. If we consider the man who makes two blades of grass grow where only one grew before to be a great benefactor of the human race, we must also assign a high place to those who seek to teach us how to use the already existing products of the earth. Dr. Gautier's descriptions of each plant are full and clear; he tells us both how and where they grow, and when they are to be found at their best; the coloured plates, though somewhat crude and indefinite, are of help, too, in the identification, and with such a book in his hand the mushroom-lover may gather and eat with great confidence. The edible species recorded here are largely to be found in our country as well as on the Continent, so that although written for French people, the volume will serve as a guide to our own fungi. Culinary details are not lacking, and are indeed very necessary, as the manner of cooking is of great importance in dealing with mushrooms.

Dr. Gautier gives a very interesting account of the use of fungi in the arts, some being employed for dyeing, others as fermentative agents. He also discusses at some length the diseases of plants caused by fungi, although he omits to tell us how to combat such diseases. There is a full account of useful remedies to be used in cases of poisoning, and a chapter is devoted to medical jurisprudence in connection with such an event. Common sense might warn people against eating the more poisonous varieties; those, for example, that grow in unhealthy localities, or have an unwholesome odour, are certain to be noxious; but such rules are not infallible, and people are foolhardy and careless, whence the need of books like this one.

The author adds a historical sketch of those botanists who have specially worked at fungi, and also furnishes an exhaustive bibliography of the subject for students who wish to learn more about this most interesting branch of Natural History.

A. L. S.

ARTICLES IN JOURNALS.

Annals of Botany (June).—M. O'Brien, 'The Proteids of Wheat.' —J. C. Willis & I. H. Burkill, 'Flowers and Insects in Great Britain.'—M. F. Ewart, 'Leaf-glands of *Ipomoea paniculata*' (1 pl.). —R. W. Phillips, 'Development of the Cystocarp in *Rhodomelaceæ*' (1 pl.). — E. A. L. Batters, 'New British Marine Algæ' (1 pl.).— H. N. Ridley, 'Two new species of *Thismia*' (1 pl.). — P. Groom, '*Thismia Aseroe* and its Mycorhiza' (2 pl.).

Bot. Centralblatt (Nos. 25, 26). — H. Steppuhn, 'Zur vergleichenden Anatomie der Dilleniaceen' (2 pl.).—(Nos. 27, 28). J. G. O. Tepper, 'Die Flora von Clarendon (Süd-Australien).'—P. Magnus, 'Eine Bemerkung zu E. Fischer's erfolgreichen Infectionen.'— (Nos. 30, 31). P. Kunth, 'Zur Befruchtung von *Primula acaulis*.' — A. Nehring, 'Das geologische Alter des Torflagers von Klinge.' —(Nos. 32, 33). O. Loew, 'Ueber das Mineralstoffbedürfniss von Pflanzenzellen.'

Botanical Gazette (June 17). — D. M. Mottier, 'Embryology of *Ranunculaceæ*' (4 pl.). — J. M. Coulter & J. N. Rose, '*Musineon* of Rafinesque' (= *Musenium* Nutt.).—B. L. Robinson, 'The Nomenclature Question.'—M. A. Nichols, 'Abnormal fruiting of *Vaucheria*' (1 pl.). — W. W. Eggleston, '*Astragalus Blakei*, sp. n.' — (July 15). J. D. Smith, Guatemala Plants. — G. F. Atkinson, 'Development of *Colletotrichum* in artificial cultures' (1 pl.). — T. Holm, 'Fossil species of *Liriodendron*' (1 pl.). — W. F. Ganong & F. V. Coville, 'The Nomenclature Question.'

Bot. Zeitung (July 16). — J. Bachmann, 'Einfluss der äusseren Bedingungen auf die Sporenbildung von *Thamnidium elegans*.'— (Aug. 16). H. Mobisch, 'Das Phycocyan, ein Krystallisirbarer Eiweisskörper.' — R. Chodat, 'Ueber die Entwickelung der *Eremosphæra viridis*.'

Bull. Soc. Bot. France (xlii, 3: June).— —. Perrot, 'Mode de formation des îlots libériens intra-ligneux des *Strychnos*.'—E. Roze, 'Sur l'origine des noms des organes floraux.' — M. Gandoger, 'Voyage botanique en Espagne.' — P. Van Tieghem, 'Genres des Dendrophthoées (Loranthées).'

Bull. de l'Herb. Boissier (April).—A. Chabert, 'Plantes nouvelles de France et d'Espagne.' — G. E. Post & E. Autran, 'Plantæ Postianæ.' — A. de Coincy, '*Alyssum Amoris*, sp. n. — J. Freyn, 'Ueber neue und bemerkenswerthe orientalische Pflanzenarten.'— (May). N. L. Britton & A. M. Vail, Penard's Colorado plants.— A. Baldacci, *Onosma Mattirolii*, sp. n. (1 pl.). — N. Alboff, 'Contributions à la Flore de la Transcaucasie' (*Chymsydia*, gen. nov. (*Umbelliferæ*)). — F. Renauld & J. Cardot, 'Mousses Nouvelles.' — P. Paiche, '*Rosa alpestris* Rafin.' — (June). A. Bennett, 'Potamogetons of the Herbarium Boissier.'—F. Crépin, *Rosa oxyodon* Boiss. —R. v. Wettstein, 'Globulariaceen-studien' (1 pl.). — A. Chabert, 'De l'emploi populaire des plantes sauvages en Savoie.'—J. Freyn, 'Orientalische Pflanzenarten' (cont.). — R. Chodat, 'Matériaux pour servir à l'histoire des Protococcoidées.' — (July). J. Müller, 'Sertum Australiense' (Lichens).—E. de Wildeman, *Palmodactylon* (1 pl.). F. Kränzlin, *Pleurothallis Autraniana*, sp. n.—(Aug.). G. Lindau, 'Acanthaceæ Americanæ.'—H. Schinz, &c., 'Beiträge zur Kenntniss der Afrikanischen Flora' (*Kelleronia* Schinz, gen. nov. (*Zygophylleæ*: 1 pl.); *Pentatrichia* Klatt., gen. nov. (*Compositæ*): 1 pl.).—J. Amann, *Amblystegium Burnati*, sp. n.

Bull. Torrey Bot. Club (June 25). — J. W. Eckfeldt, 'Lichens of Newfoundland and Labrador.' — C. S. Boyer, 'Diatomaceous Deposit at Wildwood, N. J.' — B. Heritage, 'Notes on *Nelumbo lutea*' (1 pl.). — J. B. Leiberg, 'Carpels of *Opulaster malvacea*.'— M. L. Fernald, *Aster Hendersoni*, sp. n.—(July 31). L. N. Johnson, 'New and rare Desmids of U. S.' (2 pl.). — G. V. Nash, '*Cenchrus* in N. America.'—F. V. Coville, '*Juncus scirpoides* and its immediate relatives.'—P. A. Rydberg, 'New species of *Physalis*.'—L. F. Ward, 'The Nomenclature Question.'

Erythea (July 1). — E. L. Greene, 'Notes on *Compositæ*.' — Id., 'Novitates occidentales.'—J. B. Davy, 'Plants hitherto undescribed.'

Gardeners' Chronicle (July 6, 15). — W. Roberts, 'Peter Collinson.' — (July 20). *Cupressus macrocarpa* var. *guadeloupensis* Mast. (figs. 9–12).—*Enterosora Fawcettii* Jenm., sp. n.— (Aug. 24). *Dendrobium glomeriflorum* Kränzl., sp. n. — C. T. Druery, 'Apogamic Ferns.'

Journal de Botanique (July 1). — É. Mer, 'Influence de l'état climatérique sur la croissance des Sapins.' — Drake del Castillo, 'Rubiacées trouvées au Tonkin par Balansa.' — P. Hariot, 'Algues recuillées au Congo par H. Lecomte.' — (Aug. 1). A. Franchet, 'Plantes nouvelles de la Chine occidentale' (*Lactuca*).— L. Sauvan, 'Sur les îlots libériens intra-ligneux du *Strychnos Nux-vomica*.'— C. Sauvageau, '*Ectocarpus pusillus*.'

Nuovo Giorn. Bot. Ital. ("July 15"). — P. Bolzon, 'Contribuzione alla flora del Trevigiano.' — A. Preda, 'Contribuzione alla flora vascolare del territorio livornese.'— A. Marcacci, 'Studio dell' azione di alcuni alcaloidi sulle piante.' — G. Lo Forte, 'Di alcuni apparecchi di disseminazione nelle Angiosperme.' — L. Pampaloni, 'Sul frutto di *Aucuba japonica*.' — G. Archangeli, 'Sulle affinità delle Ifenofillacee.' — P. Voglino, 'Morfologia e svillupo di *Tricholoma terrema*.'

Oesterr. Bot. Zeitschrift (July, Aug.) — W. Schmiedle, 'Beiträge zur alpinen Algenflora.' — O. v. Seemen, 'Abnorme Blütenbildung bei einer *Salix fragilis*.'—J. v. Sterneck, '*Alectorolophus*' (cont.).— J. Freyn, 'Plantæ Karoanæ Dahuricæ' (cont.).—(July). E. Halácsy, 'Zur Flora von Griechenland.'—F. Höck, 'Ueber Tannenbegleiter.' —(Aug.). B. Blocki, 'Zwei neue *Cytisus*-Arten.'

Trans. Linn. Soc. (Bot.) (v. i.: June). — H. Solms-Laubach, 'Monograph of *Acetabularieæ*' (4 pl.).

BOOK-NOTES, NEWS, &c.

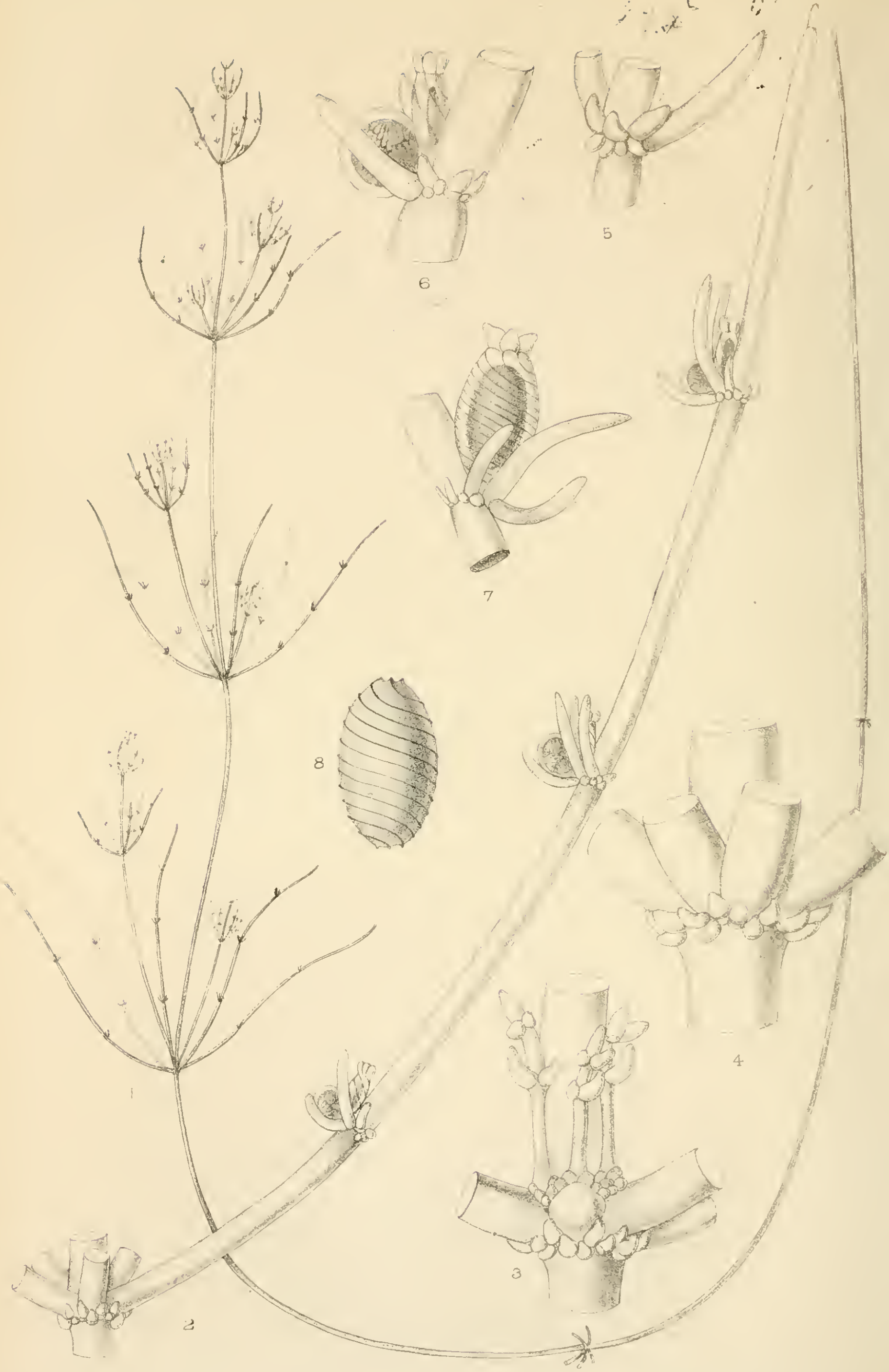
Death has been very busy among the botanists: the names of Henri Baillon, William Crawford Williamson, Frederick Kitton, Daniel C. Eaton, Julien Deby, and Jules Vesque have lately been added to the great roll of the departed. We hope to give details regarding some, at any rate, in future numbers.

The third part of Dr. Trimen's *Flora of Ceylon* has just appeared, bringing the enumeration of species down to the end of *Balanophoraceæ*. We shall have more to say of it later.

The exhibition of the British Flora in the Natural History Museum has lately received a considerable addition, another stand with swinging frames, containing about half of the smaller forms of Fungi, having been added to those already in position. The Fungi now mounted and exhibited continue the series begun by Mr. Worthington G. Smith in his drawings of the larger, more evanescent forms, and include the *Uredineæ*, *Ustilagineæ*, *Discomycetes*, and *Phycomycetes*. These groups are of especial interest to agriculturists, as many of the species described are very troublesome forms of plant-disease. Each genus and subgenus is illustrated by a drawing of some typical species in its natural size, or slightly enlarged where it has been found desirable to show the structure and habit of the plant more clearly. The fruit, spores, &c., are represented very much enlarged, and each species is accompanied by a short account of its form, colour, habits, &c. The other groups of Fungi are in course of preparation.

A note on Kniphof's *Botanica in Originali* in the *Bulletin of Miscellaneous Information* is somewhat misleading, and as the same account appears in the *Gardeners' Chronicle* for Aug. 24th, it may be well to correct it. The writer states that "the Kew copy is probably unique in being coloured" and that "there is no mention of coloured copies by any of the bibliographers." The copy in the Botanical Department of the British Museum is coloured, and it seems extremely doubtful whether any uncoloured ones exist—at any rate Pritzel describes the plates as "tab. fuligine impr. *pict.*" Brükmann's letter to Kniphof, which, it is stated, is not in the Kew library, is in the Botanical Department. In view of the erratic issue of the *Bulletin*, it may be well to point out that even the Stationery Office date, to which we referred in this Journal for 1894 (p. 180) as affording an accurate statement of the time of publication, is not always to be depended upon. The number bearing at its head "June and July" has the Stationery Office date "6/95," but did not appear until late in the latter month. Now that so many new African plants are being published almost simultaneously in several periodicals, it is to be regretted that care is not taken to avoid the confusion which must certainly arise if the various journals are not accurately dated.

Tab. 350.



H. Groves del.
R. Morgan lith.

West, Newman imp.

Chara denudata *Braun*

NOTES ON THE BRITISH CHARACEÆ, 1890–1894.

By H. & J. Groves, F.L.S.

(Plate 350.)

During the five years that have elapsed since our last instalment of 'Notes' was published (*Journ. Bot.* 1890, p. 65), but little material has reached us furnishing additions to the known distribution of the various species in England and Scotland, the most interesting record being that of *Nitella mucronata* from Oxford. On the other hand, a great deal has been done in this direction in Ireland, the most noteworthy items being the discovery by Mr. Levinge of *Chara denudata*, which is new to the British Islands, the finding of *Nitella tenuissima* in two widely separated stations, the discovery by Mr. Scully of *C. canescens*, both the latter species being new to Ireland, and the finding of *N. gracilis* in quantity, a few scraps only having been previously collected. We are much indebted to our correspondents for specimens and information, especially to Mr. Arthur Bennett and Mr. R. Ll. Praeger, who have sent us a great number of specimens. Many of the records from Ireland in the present instalment of notes have already been published by us in the *Irish Naturalist* (June, 1893, and Jan. and Feb. 1895), but we have included them, as we have thought it best for the sake of uniformity to incorporate all those which have not been recorded in our 'Review' nor the subsequent 'Notes' in this Journal.

The question of hybridity among the *Characeæ* is an important one, and we hope that botanists will carefully examine localities where two or more species exist in quantity.

Chara fragilis, *Desv.*—Suffolk E., 1882, *W. M. Hind*, comm. *A. Bennett;* Glamorgan, 1890, *R. & F. Thompson;* Denbigh, 1875, *W. Whitwell;* Lincoln S., 1862, *Carrington;* Stirling, 1891, *R. Kidston & J. S. Stirling;* Ebudes M., 1889, *J. S. Stirling & R. Kidston;* Queen's Co., 1893, *R. Ll. Praeger;* Limerick, 1892, *H. & J. G.;* Mayo W., *A. G. More;* Tyrone, 1891, *S. A. Brenan;* Armagh, 1882, *H. W. Lett.*

var. *barbata.*—Cornwall W., 1884, *W. Curnow, herb. Steuart;* Essex S., 1893, and Westmoreland, 1892, *E. S. Salmon;* Selkirk, 1892, *E. S. Marshall;* Berwick, 1881, —. *Renton*, comm. *A. Bennett;* Clyde Isles, 1891, *T. King*, comm. *A. Bennett;* Kerry N., 1894, *D. McArdle;* King's Co., 1894, and Down, 1891, *R. Ll. Praeger.*

var. *capillacea.*—Outer Hebrides, 1892, *W. S. Duncan*, comm. *A. Bennett;* Dublin, 1894, *R. Ll. Praeger;* Channel Islands (Guernsey), 1891, *E. D. Marquand.*

var. *Hedwigii.*—Sussex E., 1894, *E. S. Salmon;* Worcester, 1891, *J. E. Nowers;* Anglesea, 1889, *J. E. Griffith*, comm. *A. Bennett:* Dublin, 1894, and Down, 1891, *R. Ll. Praeger.*

var. *delicatula.*—Hants S., 1889, *H. N. Dixon;* Norfolk E., 1891, *J. Bidgood;* Skye, 1892, *F. E. Weiss;* Dublin, 1894, *R. Ll. Praeger;* Armagh, 1880, *Herb. R. Ll. Praeger.*

C. ASPERA, *Willd.*—Devon S., Thurlstone, 1894, *E. S. Marshall;* I. of Wight, between Freshwater and Norton, 1892, *A. Steuart;* Hants N., Fleet Pond, 1893, *E. S. Salmon* (var. *subinermis* already recorded); Suffolk E., Redgrave Fen, 1881, *W. M. Hind*, comm. *A. Bennett;* Yorks. N.W., Carperby, 1884, *J. Percival*, comm. *A. Bennett;* Selkirk, Faldonside, 1892, *E. S. Marshall;* Queen's Co., Farmhill, 1890, *R. W. Scully;* Kildare, Monasterevan, 1893, *R. Ll. Praeger;* Mayo W:, L. Cullen, *A. G. More;* Armagh, Navan Fort, 1892, and Derry, L. Beg, 1894, *R. Ll. Praeger.*

var. *subinermis.*—Armagh, L. Neagh, 1892, and Derry, R. Bann, 1894, *R. Ll. Praeger;* Channel I. (Guernsey), Grande Mare, 1891, *E. D. Marquand.*

var. *lacustris.*—Tyrone, L. Neagh, 1891, *S. A. Brenan;* Armagh, L. Neagh, 1890, *R. Ll. Praeger;* Antrim, L. Neagh, 1894, *S. A. Stewart.*

C. POLYACANTHA, *Braun.*—Lincoln N., Bigby, 1894, "*Mason & Peacock,*" comm. *A. Bennett;* Selkirk, Faldonside, 1892, *E. S. Marshall;* Cork N., Shanagarry Bog, *I. Carroll* (v.-c. not identified in our 'Review'); Queen's Co., and Kildare, near Monasterevan, 1893, *R. Ll. Praeger;* Wicklow, nr. Newcastle, 1892, *R. M. Barrington & H. & J. G.;* Westmeath, Scraw Bog, nr. L. Owel, 1892, *H. C. Levinge;* Galway W., Moycullen, 1892, *H. & J. G.;* Armagh, Loughgall L., 1892, *R. Ll. Praeger.*

C. PAPILLOSA, *Kuetz.*—In 1893 were visited Heigham Sounds, E. Norfolk, and a more extended examination of the Charas growing there led us to think that the plant we have recorded under this name is a hybrid between *C. hispida* and *C. contraria.*

C. CONTRARIA, *Kuetz.*—Bedford, Totternhoe, 1893, *J. Saunders & H. G.;* Queen's Co. and Kildare, nr. Monasterevan, 1893, *R. Ll. Praeger;* Westmeath, L. Ennel, 1892, *H. & J. G.;* Armagh, L. Neagh, 1880, *H. W. Lett;* Down, Clandeboyl Lower Lake, 1891, *R. Ll. Praeger;* Derry, nr. Limavady Junc., 1889, *W. D. Donnan, herb. S. A. Stewart.*

C. DENUDATA, *Braun*, Schweiz. Char. (1847), p. 5; Braun in Drege & Meyer, Pflanzengeogr. Docum. (1843), p. 50 (name). *C. dissoluta*, Leonh., Oesterr. Arml. (1864), pp. 42 & 63; Braun, Consp. Char. Europ. p. 4; Monatsb. Berl. Akad. 1867, p. 831; Fragm. Mon. Char. (1882), p. 145, t. vii. f. 224 (cortical cells only); Sydow, Europ. Char. (1882), p. 55; Migula in Rabenh. Krypt. Flor. Deutsch. sect. 6, p. 378, t. 91.

Stem slender, weak. Cortex imperfectly diplostichous, or sometimes quite rudimentary and consisting of single cells, but little larger than the stipulodes, above and below each branchlet. Spine-cells, when developed, short spreading or papillate. Stipulodes in a double row, small, oval. Whorls of usually 6–8 spreading branchlets. Branchlets of 4–6 segments, the ultimate segment very short; cortex rudimentary, represented by a ring of cells at each fruiting node, the anterior cell often lengthening and projecting below the antheridium. Bract-cells usually 6, anterior 1–1½ times as long as the fruit, posterior very short. Fruits produced at the 2–3 lower nodes, oval, 1–1·1 mm. long, ·55–·62 thick. Nucleus ·69–·82 long, ·41–·46 thick, showing 12 striæ. Coronula spreading. Antheridium ·40–·42 in diameter. Monœcious.

A medium-sized grey-green plant, of a weak straggling habit, with rather slender stem and branchlets, considerably encrusted. It differs from *C. contraria* by its cortex being more or less rudimentary, but is very closely allied to that species.

C. denudata was first described by Braun from specimens collected at the Cape, and it has since been recorded from Switzerland and Italy. It was discovered in Ireland, in 1892, by Mr. H. C. Levinge, growing in dense masses in about 12 ft. of water in Brittas Lake, Knock Drin, Westmeath. Our description and plate are taken from the Irish plant, which appears to be more extreme than either of the European forms. The Swiss plant from the Lake of Neuchatel, which occurs in 60 ft. of water, has a cortex to the stem, but with the primary cells only developed, and has sometimes one or two corticate segments to the branchlets.

We have received a form of *C. contraria*, collected by Mr. W. B. Waterfall in the Upper Engadine, which usually has all the segments of the branchlets uncoated, but with here and there 1–2 corticate. The fact of *C. contraria* having a form with entirely uncoated fruiting branchlets and *C. denudata* having sometimes partially corticate branchlets suggests the question whether the plants included under the latter name are more than extreme forms of the former. We have, however, kept the Irish plant in cultivation for about a year, and it has retained its distinctive characters, so that we feel bound for the present to retain its specific rank.

C. denudata is known on the Continent under the later name of *C. dissoluta*, which was adopted by Braun in his more recent works, because he found that the African plant was not completely ecorticate, as he at first thought; but this is not an allowable reason for rejecting the earlier name, which must therefore stand.

C. TOMENTOSA, *L.*—We think the plant collected by Mr. Arthur Bennett in East Norfolk, and recorded in *Journ. Bot.* 1882, p. 86, under this name, is a large state of the supposed hybrid above referred to under *C. papillosa*.

C. HISPIDA, *L.*—Bucks, 1882, *J. Saunders;* Gloster W. & E. (?), "Canal at Tetbury Road," 1870, *W. R. McNab;* Warwick, 1857, *T. Kirk;* Derby, 1883, *J. E. Nowers;* Lake Lancs., 1890, *C. Bailey;* Kerry N., 1894, *D. McArdle;* Queen's Co. and Kildare, 1890, *R. W. Scully;* Dublin, 1893, Armagh, 1892, and Down, 1891, *R. Ll. Praeger;* Derry, 1892, *M. J. Leebody.*

var. *macracantha.*—Dublin, Maynooth, 1890, *D. McArdle.*

var. *rudis.*—Anglesea, Llyn Wyth Eidol, 1885, *J. E. Griffith*, comm. *A. Bennett;* Westmeath, Brittas Lake, 1892, *H. C. Levinge & H. & J. G.;* Galway W., Arranmore, 1891, *S. A. Stewart;* Mayo W., Ballina, 1891, *A. Somerville*, comm. *A. Bennett;* Armagh, nr. Navan Fort, 1892, *R. Ll. Praeger.*

C. VULGARIS, *L.*—Wilts N., 1893, *C. Bailey;* Gloster E., 1871, *W. R. McNab;* Wigton, 1889, *J. McAndrew*, comm. *A. Bennett;*

Selkirk, 1892, *F. S. Marshall;* Queen's Co. and Kildare, 1890, *R. W. Scully;* Galway W., 1890, *J. E. Nowers;* Armagh, 1882, *H. W. Lett;* Derry, 1892, *M. J. Leebody.*

var. *longibracteata.*—Devon S., 1894, *E. S. Marshall;* Kent W., 1892, *C. E. Salmon;* Northants., 1889, *H. N. Dixon;* Staffs., 1891, *J. E. Nowers;* Caithness, 1893, *R. Kidston;* Wicklow, 1894, *R. Ll. Praeger;* Channel I. (Guernsey), 1892, *E. D. Marquand.*

var. *papillata.*—Surrey, *McIvor in herb. Dublin;* Northants., 1889, *H. N. Dixon;* Staffs., 1891, *J. E. Nowers;* Clyde Isles (Cumbrae), 1891, *T. King,* comm. *A. Bennett;* Queen's Co., 1890, *R. W. Scully.*

var. *crassicaulis.*—Hants N., Leckford, 1863, *C. B. Clarke.*

C. CANESCENS, *Loisel.*—Kerry N., Castle Gregory Lake, 1894, *R. W. Scully.* A very interesting addition to the Irish Flora.

TOLYPELLA GLOMERATA, *Leonh.*—Berks, Marcham, 1891, *G. C. Druce;* Bucks, Castlethorpe, 1892, *H. N. Dixon;* Lincoln N., Wainfleet, 1894, *A. Woodruffe & —. Peacock,* comm. *A. Bennett;* Kildare, Maynooth, 1892, *R. Ll. Praeger;* Westmeath, L. Ennel, 1892, *H. & J. G.*

T. INTRICATA, *Leonh.*—Middlesex, Shortwood Common, 1892, *J. G.;* Oxon, Marston, 1889, *G. C. Druce.*

NITELLA NORDSTEDTIANA, *Groves.*—Kerry S., Caragh Lake, 1889, and Lower Lake Killarney, 1890, *R. W. Scully.*

N. TENUISSIMA, *Kuetz.*—Galway E., nr. Ballindooley, 1892, *H. & J. G.;* Westmeath, Scraw Bog, nr. L. Owel, 1892, *H. C. Levinge & H. & J. G.*

N. GRACILIS, *Ag.*—Wicklow, Luggala and L. Dan, 1892, *R. M. Barrington & H. & J. G.* The plant recorded by us from Caragh Lake, Kerry S., under this name in *Journ. Bot.* 1890, p. 68, is *N. Nordstedtiana.*

N. MUCRONATA, *Kuetz.*—Oxon, nr. Oxford, 1892, *G. C. Druce.*

N. TRANSLUCENS, *Ag.*—Dumfries, Town Fort Loch, 1885, *F. R. Coles,* comm. *A. Bennett;* Westerness, Loch Blain, Moidart, 1893, *S. M. Macvicar,* comm. *A. Bennett;* Armagh, Carbel Lake, 1892, *R. Ll. Praeger.*

N. FLEXILIS, *Ag.*—Worcester, Northfield, 1886, *J. G.;* Dumfries, Town Fort Loch, 1885, *F. R. Coles,* comm. *A. Bennett;* Cork S., Glengariff, *I. Carroll;* Antrim, Camlough R., 1892, *R. Ll. Praeger.*

var. *nidifica.*—Kerry S., Killarney, 1861, *Herb. Carrington.*

N. OPACA, *Ag.*—Wilts S., 1894, *E. J. Tatum;* Merioneth, 1893, *J. E. Nowers;* Outer Hebrides (Scarp), 1892, *W. S. Duncan,* comm. *A. Bennett;* Westerness, Loch na Craiche, Moidart, 1893, *S. M. Macvicar,* comm. *A. Bennett;* Wicklow, 1884, *F. W. Moore.* The plant recorded under this name from Worcester (*Journ. Bot.* 1887, p. 146) proves to be a young state of *N. flexilis.*

EXPLANATION OF PLATE 350.—1. *Chara denudata,* Braun.; plant natural size. 2. Node and branchlet × 15. 3 & 4. Nodes showing rudimentary cortical cells × 32. 5. Barren node of branchlet, showing posterior bract-cells and rudimentary cortical cells × 32. 6. Fruiting node of branchlet × 32. 7. Fruit × 19. 8. Oospore × 32.

MR. SCOTT ELLIOT'S TROPICAL AFRICAN ORCHIDS.

By A. B. Rendle, M.A., F.L.S.

(Concluded from p. 281.)

Habenaria (§ Multipartitæ) **præstans**, sp. nov. Caule crasso, foliis lanceolatis amplexicaulibus plus minus obtecto; racemo bracteoso denso, floribus magnis, sepalis patentibus, dorsali ovato obtuso, lateralibus oblique ovatis sub apice breviter pungentibus, petalis falcatis, sepalo dorsali adnatis et æquilongis; labello tripartito, segmentis hispidulis, lobo medio anguste lineari, lateralibus huic æquilongis longe fimbriatis, calcare clavato ovarium haud æquante; processubus stigmaticis longis antice pediformibus, antheræ canales tenues triplo excedentibus.

Hab. Sunny hills, Ruwenzori, 6000–7000 ft., No. 7808.

The thick leafy stems reach a height of 2 ft., including the handsome 10-in.-long inflorescence. The broadly lanceolate leaves are continued up to the raceme, the large lanceolate bracts of which resemble them in texture. The latter in the lower part of the raceme may reach a length of 2 in. with a breadth of ½ in., and far exceed the ovary on its short stalk (together 1 in.); above they are shorter, often scarcely reaching the base of the sepals. The flowers are described as yellow-green. The sepals have 5-7 dark nerves, joined by similarly well-marked transverse veins; they are ¾ in. long, the dorsal being 5 lines broad, the lateral ones 4 lines; the latter bear a short dorsal mucro just beneath the apex. The 3-nerved petals are 2½ lines broad. The lip is 1 in. long, its segments are minutely hispid on the upper surface, as in *H. splendens;* the lateral segments are cut up into a number of forwardly-spreading filiform segments. The spur is 8 lines long by 1½ in diameter. The stigmatic processes, which resemble those in *H. macrantha*, are nearly 7 lines long, adnate at the base to the anther-cells, the narrow canals of which are 2 lines.

Is closely allied to the Abyssinian *H. macrantha* Rchb. f. and *H. splendens* Rendle, from Kilimanjaro. From the former it differs in its much narrower petals and much fimbriated lateral lobes of the lip, which moreover is hispidulous, and not glabrous above. From *H. splendens* it is distinguished by the very short spur, shorter non-acuminate petals, as well as by the more fimbriated lip-lobes.

Habenaria tenuispica, sp. nov. Caule folioso, foliis a basi vaginante lineari-acuminatis; bracteis lanceolatis acutis, ovaria longa breviter pedicellata haud æquantibus; spica tenui densiflora, floribus minutis; sepalo dorsali ovato obtuso subcucullato, lateralibus vix majoribus reflexis oblongis obtusis, petalis oblique triangulari-ovatis, sepalum dorsale æquantibus, labello trilobo, lobo medio majore, calcare tenui ovario plus duplo breviore; processubus stigmaticis brevibus crassis apice pediforme valde papilloso, antheræ canalibus brevissimis.

Hab. Butagu, Ruwenzori, 9000 ft., July (rains), 1894, No. 7952.

A slender plant 2 ft. or more in height; the lower leaves with a loose membranous sheath, the upper merely amplexicaul at the base, the tapering blade 7 in. long by $\frac{1}{2}$ broad, the uppermost shorter (4 in.), and followed by a couple of smaller bracts below the spike (5 in.). Lower flowering-bracts 5 lines long, ovary and stalk $\frac{1}{2}$ in. Dorsal sepal 3-nerved, $1\frac{1}{5}$ lines long by $\frac{5}{6}$ line broad, lateral $1\frac{2}{5}$ by $\frac{3}{5}$; petals spreading, larger anteriorly, $1\frac{1}{5}$ lines by $\frac{2}{3}$ line. Lip $1\frac{1}{4}$ lines to end of middle lobe, which is $\frac{3}{4}$ line broad, the lateral lobes being $\frac{1}{2}$ line; all are obtuse; spur $2\frac{1}{3}$ lines long. Stigmatic processes $\frac{2}{3}$ line.

Near *H. microceras* Hook. f., from the Cameroons, but distinguished by its long narrow leaves and longer spur.

HABENARIA PERISTYLOIDES A. Rich. in *Ann. Sci. Nat.* ser. 2, xiv. 270. Caule folioso sub spicam parvifloram laxe bracteato, foliis e basi vaginante anguste lanceolatis; sepalis petalisque incurvatis, sepalo dorsali oblanceolato-ovali acuto, lateralibus majoribus falcato-ovatis apiculatis, petalis oblanceolatis obtusis, labello plano e basi cordato 3-lobo, lobo medio multo majore ligulato crasso, calcare brevissimo; processubus stigmaticis parallelis super labelli basin extensis, rostello magno sub antheræ loculos divergentes patente; glandulis nudis extrusis.

Hab. Sunny hillsides, Ruwenzori, 6–7000 ft., No. 7646.

Distrib. Abyssinia.

Lower portion of plant absent; the longest leaf has a sheath of $1\frac{2}{3}$ in., with a blade of more than 4 in.; the upper leaves are shorter; a few acuminate sterile bracts precede the spike, which in the larger specimen is $4\frac{1}{2}$ in. long. The lanceolate-acuminate bracts are $\frac{3}{4}$ in. in the lower part of the spike, and exceed the flowers in length. The 3-nerved dorsal sepal is hardly 2 lines long by 1 broad, the 5-nerved lateral ones are $2\frac{1}{2}$ by $1\frac{1}{2}$ lines; the obtuse sometimes subapiculate petals are slightly shorter than the dorsal sepal, and 1 line broad. The lip is $3\frac{1}{4}$ lines long, the large central lobe $2\frac{1}{4}$ lines by $\frac{3}{4}$ line, the small narrower lateral ones only 1 line long; the spur is less than 1 line long, and shorter than the base of the lip. The stigmatic processes are subclavate in outline, shallowly canaliculate above, convex beneath, resting on the base of the lip, and $\frac{3}{4}$ line long. The rostellum is large and spreading; the anther-cells are not elongated into canals. The ovary, with its short stalk, is 4–5 lines long.

The Abyssinian *H. peristyloides* Rich. is known only from the description and floral analysis in *Ann. Sci. Nat.* ser. 2, xiv. p. 270, t. 17, fig. iii., and description in the same author's *Tentam. Fl. Abyss.* ii. 291. Richard figures stigmatic processes precisely similar to those of the Ruwenzori plant in the same position, but makes the spur longer than the auricled base of the lip, and the median lobe of the latter too narrow; the leaves are also described as oval-lanceolate.

Richard's observations apply equally well to either plant; as he says, they combine the characters of the two genera *Habenaria* and *Peristylus*, having the connivent almost galeate sepals and petals, the thick lip, and short spur of the latter, and at the same time the two fleshy appendices originating in the lower stigmatic region, which constitute the diagnostic character of the genus

Habenaria. He also calls attention to the marked peculiarity of these processes, which, instead of being "redressés," and following more or less the direction of the lower extremity of the anther-cells, are "couchés sur la base du labelle, avec lequel ils ne contractent d'adhérence qu'immédiatement à leur base."

On account of the agreement in the remarkable character of the stigmatic processes, I have identified the Ruwenzori plant with the Abyssinian species, in spite of the discrepancy in the shape of its leaves. In this identification Prof. Kränzlin, who kindly gave me his opinion on this and several other of the Habenarias, quite agrees. The differences in the relative lengths and breadths of the spur and lip-lobes may very well be due to a want of accuracy in Richard's drawing, especially as his two figures, of the whole flower and the lip and column respectively, do not agree among themselves. I have thought it useful to give a description of the Ruwenzori plant.

BRACHYCORYTHIS PUBESCENS Harv. in *Thes. Cap.* i. 35. *Peristylus hispidula* Rendle in *Journ. Linn. Soc.* xxx. 398.

Hab. Milanji, Shire Highlands, Dec. 1894, No. 8687.

Distrib. Tropical and South Africa.

BRACHYCORYTHIS PLEISTOPHYLLA Rchb. f. in *Otia Bot. Hamb.* 104.

Hab. Sotchi, Shire Highlands, Dec. (lesser rains), 1894, No. 8570.

HABENARIA (PLATYCORYNE) BUCHANANIANA Kränzl. in *Engl. Jahrb.* xix. 247.

Hab. Milanji, Shire Highlands, Dec. 1894, No. 8617.

CYNOSORCHIS ANACAMPTOIDES Kränzl. in *Pflanzenwelt Ost-Afrikas,* pt. C. 151 (1895).

Hab. Ruwenzori. Kivata, open places, 9000 ft., No. 7648; and sunny places, 9600 ft., No. 7747, May (greater rains); Butagu, in heather, 9–10,000 ft., July (rains), No. 8008 pars.

The type was collected by Stuhlmann on Ruwenzori.

SATYRIUM CORIOPHOROIDES A. Rich. in *Ann. Sci. Nat.* ser. 2, xiv. 274. Var. SACCULATA, var. nov.: spica angustiore, galea cum sacculo utrinque calcaribus proposito, lobo medio rostelli majore, stigmate vix latiore.

Hab. Ruwenzori, July (rains). Butagu, 10,000 ft., No. 7964; in peat moss, Nyamwamba, 10,000 ft., No. 8097.

Type in Abyssinia.

In the determination of this plant I have consulted Mr. R. Schlechter, who is monographing the genus, and he suggests that the presence of the saccules on either side of the labellum, which moreover vary in size in different flowers, together with the slight differences in the rostellum and stigma, are insufficient for the diagnosis of a new species.

Satyrium crassicaule, sp. nov. Caule valde crasso folioso plus minus elongato, foliis magnis ad 7-nerviis, basi vaginantibus, inferioribus lineari-lanceolatis plus minus elongatis, superioribus lanceolatis, sub spicam in bracteas lineari-lanceolatas cito trans-

euntibus; spica cylindrica densa bracteosa, bracteis reflexis quam flores longioribus; floribus inter minores, perianthii segmentis basi in tubum breve connatis, sepalis hispidulis, lateralibus majoribus cuneatis vel oblongo-cuneatis, dorsali lineari-oblanceolato, petalis glabris ligulatis æquilongo; labello postico cucullato, dorso carinato, apice obtuse triangulo reflexo, calcaribus tenuibus acutis, ovarium paullo excedentibus; columna tenui tereti, stigmate bilabiato, lobis crassis late rotundatis, rostelli lobo medio orbiculari, lateralibus parvis dentiformibus.

Hab. Ruwenzori. Marshy place, Wimi, 6–7000 ft., June (rains), No. 7851; sunny hillsides, 6–7000 ft., No. 7812; Butagu, about 10,000 ft., July (rains), Nos. 8059, 7949, and 8008 pars.

In the largest specimen the stem is $\frac{1}{2}$ in. thick, and more than a yard in length; this specimen (No. 7851) is from a marshy place, and has evidently grown very rankly, having much-elongated internodes, and leaves as much as 16 in. long and $1\frac{1}{2}$ in. broad. No. 7812, from the sunny hillsides, is only 25 in., with shorter oval-lanceolate and lanceolate leaves more crowded at the base of the stem. The dense spike reaches 8–9 in. in length, the sharply-reflexed linear-lanceolate or linear-acuminate bracts 1 in. The petals and sepals spread before the wide opening of the lip, which rises 2 lines above them. The lateral sepals are $2\frac{1}{2}$ lines long by $\frac{5}{6}$ line broad; the smaller dorsal sepals and petals are scarcely 2 lines long; the narrow spurs are $\frac{1}{2}$ in. long. In No. 8008 the spurs are slightly longer (8 lines), as are also the odd sepal and the petals ($2\frac{1}{2}$ lines).

A well-marked species, near the South African *S. ocellatum* Bolus (*Orchids of South Africa*, i. t. 23).

Satyrium niloticum, sp. nov. Erecta; caule crasso, foliis vaginantibus superne lanceolatis vestito; spica densa bracteosa, bracteis 3-nerviis lineari-lanceolatis acuminatis reflexis quam flores (inter minores) duplo longioribus; sepalis petalisque similibus glabris cum labelli basi in tubum brevem connatis, sep. dorsali cum petalis lineari-oblongis, sep. lateralibus oblongis, majoribus, labello rotunde cucullato dorso carinato, apice brevi obtuso, calcaribus tenuibus apice acutis, ovarium sessile subæquantibus; columna tenui tereti, stigmate erecto, rostello 3-dentato, dente medio multo majore inter pollinarii glandulos projecto.

Hab. Marsh, Nandi, Nile watershed, 7–8000 ft., Dec. 1893, No. 6938.

A unique specimen, with the lower portion absent. It is 16 in. in height, bearing 2 adpressed leaves, which, including the sheath, are about 5 in. long. The oblong spike, the flowers in the upper part of which are still unexpanded, is 4 in. long. The narrow pointed bracts reach 1 in. in length. The odd sepal and petals are 2 lines by $\frac{3}{5}$ line, the lateral sepals $2\frac{1}{2}$ lines by 1 line. The open hood rises $2\frac{1}{2}$ lines above the other spreading perianth-limbs. The narrow oval sessile ovary is 5 lines long.

A species closely allied to the above, but distinguished by the marked similarity of its five perianth-segments, very short obtuse apex to the hood, and tridentate rostellum.

Disa Gregoriana Rendle in *Journ. Linn. Soc.* xxx. 398.

Hab. Ruwenzori; Butagu, Semliki Valley, 10,000–12,000 ft., July (rains), No. 8058; Yeria, May, above forest, 10,000 ft., No. 7850, and amongst short bushes and tree heath over 10,000 ft., No. 7860.

The flowers of the Ruwenzori plants have a slightly longer lip, and are sometimes larger, than those of the type collected by Dr. Gregory at 10,400 ft. on Mt. Kenya.

Disa Stairsii Kränzl. in *Gard. Chron.* xii. (1892), 728, brought from Ruwenzori by Lieut. Stairs, is evidently, from the description, closely allied, but differs in having broadly oval, not ligulate, petals, and obovate, not oblong, sepals.

D. Wissmannii Kränzl. in *Pflanzenwelt Ost-Afr.* pt. C. 154 (1895), from Kilimanjaro, is the same as *D. Gregoriana.*

Disa erubescens, sp. nov. Planta tota colore rubro plus minus saturata; foliis gramineis; caule crassiusculo, bracteis supra basin vaginantem appressis, superne deminutis et transitum in bracteas florentes præbentibus vestito, a spica sublaxa terminato; floribus pro genere magnis, bracteas ovales vel obovato-ovales acuminatas paullo superantibus; sepalo dorsali magno spathulato, parte inferiore super antheram arcuata, parte superiore et latiore horizontaliter directa, et sub medium calcare plus minus erecto instructa, sep. lateralibus oblongis, petalis cum sep. dorsale parallelis, basi semicordatis, apice in caudam longam geniculatam productis; labello filiforme sepalis lateralibus breviore; columna brevi, rostello breviter cucullato.

Hab. Ruwenzori; sunny hillsides, 6–7000 ft., No. 7809.

The flowering-stem is about 20 in. in height, and apparently appears before the leaves; a shoot consisting of two leaves only, and probably immature, is present, but detached from the flowering specimens. These grass-like linear tapering leaves are strongly tinged with red, like the rest of the plant, and reach 1 ft. in length. In the lower stem-bracts a deeply-spotted basal sheath is continued into an ovate-lanceolate adpressed blade; the lowest reach 3 in. in length. The oblong spike is 3–5 in. long. The lower bracts reach 1½ in., the upper ones are a little over 1 in., the sessile cylindrical ovary being ¾ in. The flowers are deep red. The large dorsal sepal is 1 in. long; the claw has involute edges, and broadens above into a shallowly hooded blade 5 lines broad, bearing from the centre of its back the 5-lines-long spur, which becomes slightly swollen in the lower part. The lateral sepals have a slightly thickened and minutely hooded tip, and are scarcely ¾ in. long by ¼ broad. The petals have an erect base, 3½ by 2½ lines, in shape broadly cordate with the posterior half removed, continued into a linear apex with involute edges, ½ in. long, and strongly geniculate at about the middle. The thread-like lip is 5½ lines long. The stigma is large and rounded; the erect anthers are 2½ lines long.

A very distinct species, characterised by the strange shape of its dorsal sepal and petals.

Disperis nemorosa, sp. nov. Herba semipedalis glabra, caule debili medio bifoliato; foliis oppositis ovatis acutis, bracteis acuminatis; floribus 2–3, sepalo dorsali cum petalis in galeam coalito, hac postice in calcar longum continuata, apice acuta, et cum lateribus antice supra basin excavatis; sepalis lateralibus rhomboideo-ovatis acutis; labello longissimo, basi medioque rursus reflexa, in calcar latente, apice dilato crispulato subtrilobulo; rostelli brachiis magnis, margine involutis, apice glanduliferis arcuatis.

Hab. Deep forest, Wimi, Ruwenzori, 7000–8000 ft., June (rains), 1894, No. 7944.

A weak little plant of the habit of *Disperis Anthoceros* Rchb. f. The membranous subsessile leaves are 1½–1¾ in. long, 1–1⅕ in. broad; the acuminate bracts resemble them in texture, and are 6–8 lines long by 2–3 broad. The flowers on the long (8–10 lines) narrow sessile ovaries are about ¾ in. long. The hood, in which it is impossible to separate sepals from petals, measures 7 lines from the apex to the blunt end of the uniform straight spur (4½ lines). The rounded sides of the petals recede into a blunt incision anteriorly. The lateral sepals are 4½ by 3 lines; they bear a short conical saccule on the anterior side above the base. The lip is 11 lines long, sharply recurved at its base, passing between the large branches of the rostellum and down the spur, near the end of which it is again sharply bent forward, bringing the expanded apex to the mouth of the flower; the lower half is filiform, the upper slightly wider, but very narrowly linear; the expanded tip is 1½ lines broad; at the median bend on the inside is a short filiform appendage a little over 1 line long.

An interesting little plant, at first sight apparently conspecific with *D. Anthoceros* Rchb. f., from Abyssinia and Natal. It differs, however, in its acuminate bracts and important floral particulars, the lateral sepals being larger, more rhomboid in shape, and pointed, the petals having a deep incision above the base, and the very peculiar lip being more than twice as long and bent double, and appendaged at the middle.

Liparis guineensis Lindl. in *Bot. Reg.* 1835, t. 1671.

Hab. Butagu, Ruwenzori, about 9000 ft., July (rains), 1894, No. 8056.

Distrib. West Tropical Africa.

WILLIAM CRAWFORD WILLIAMSON.

William Crawford Williamson was born at Scarborough, on Nov. 24th, 1816. His father was much devoted to geology, collected the fossils of the Yorkshire Oolites, and communicated many specimens to Brongniart for his works on fossil plants. The son became interested in his father's studies: when only fifteen years of age he began to assist Lindley and Hutton in their *Fossil Flora*, to which work he supplied descriptions and drawings for 32 plates, a seventh of the whole work. The first plate engraved from his drawing is *Cyclopteris Beanii*, which was published in

July, 1832. The authors repeatedly record their acknowledgments to the boy geologist, "our excellent and indefatigable correspondent, Mr. Williamson, jun." When he was nineteen years old he was appointed curator of the museum of the Manchester Natural History Society. Destined for the medical profession, he, after three years' service in the museum, resumed his studies, which he completed at University College, London, and in 1841 he began to practise in Manchester.

All his spare time was devoted to the study of the Foraminifera, and this resulted in the preparation of his great work on these animals which was published by the Ray Society. In 1851 he was elected Professor of Biology and Geology in Owens College. He published valuable memoirs on the minute structure of the bones and teeth of man in the *Philosophical Transactions*, and in 1854 was elected F.R.S.

In 1867 I was engaged in working out the species of British *Cycadeæ*, and had to face the investigation of *Zamia gigas*. Prof. Williamson supplied the drawing of this fossil which was published in Lindley and Hutton's *Fossil Flora* in 1835, and had continued to study this remarkable plant. I accordingly applied to him for help, and he most generously sent me an extensive memoir with drawings which he had prepared, and placed the whole of his work absolutely at my disposal. I obtained the author's permission to present it to the Linnean Society, and in a somewhat condensed form it was published, with two quarto plates, in the *Transactions* of that body in 1868. No better interpretation of the fossil has been given; we still wait for an intelligent exposition of the affinities of the two inflorescences to any known Cycadean fructification.

Probably the preparation of this memoir for publication brought Dr. Williamson back to his original studies. This was further favoured by the discovery of calcareous nodules in the coal-beds of Oldham. These supplied the first materials on which he worked. He afterwards obtained similar specimens from the amygdaloidal traps of Burntisland, and the ash rocks of Arran. He acquired the art of slicing these fossiliferous concretions. By extraordinary application he produced a great series of slides: these supplied the materials on which the memoirs were based that have appeared almost every year in the *Philosophical Transactions* since 1871. No such store of information on the minute structure of the plants of the Coal Measures anywhere else exists. They abound in descriptions of hitherto unknown forms, and in additions to the knowledge of previously known forms. As they represent the progress of the author's knowledge through the discovery of additional material, they were not issued in systematic order. Happily for some time he associated with himself in the revision of his work Dr. D. H. Scott, Keeper of the Jodrell Laboratory, Kew. They issued, some months ago, the first part of a second series of memoirs dealing with *Calamites* and allied fossils. In the interests of science it is most desirable that this work should be continued, and that the immense collection of slides formed by Dr. Williamson should be fully at the service of Dr. Scott until he completes the revision. The students of fossil botany would be under still greater obligations to Dr. Scott if he would fully incorporate with the labours of his late colleague the work of investigators on the Continent and at home, so as to present to the readers of his memoirs a complete view of the present knowledge of the structure of the plants of the Carboniferous Period.

Williamson was a member of many societies, and in 1883 received the degree of LL.D. from the University of Edinburgh. He resigned the Chair of Botany at Owens College in 1892, and took up his residence at Clapham, where he died on the 23rd of June last.

William Carruthers.

ASCLEPIADACEÆ ELLIOTIANÆ.

By R. Schlechter.

The following is an enumeration of the Asclepiads which were collected by Mr. Scott Elliot during his recent expeditions in Central Africa, especially to Mount Ruwenzori, which I have drawn up from his collection now in the British Museum. As was to be expected, the collection proved to be a most interesting one. Of about thirty-seven different species, seventeen are new, that is to say, nearly fifty per cent., and include one new genus. The range of distribution of the two genera *Glossonema* and *Marsdenia* is much extended by the discovery of *Glossonema Elliotii* Schltr. and *Marsdenia zambesiaca* Schltr.; the former being the only representative of the genus in the Southern Hemisphere, while the latter genus was known only from Western Tropical Africa (Angola), but not so far south as the Zambesi on the east coast.

Cryptolepis R. Br.

There is no reason for separating the two genera *Ectadiopsis* Bth. and *Cryptolepis* R. Br. The upright species of *Ectadiopsis* I have considered sufficiently distinct in habit to keep them as a separate section of *Cryptolepis*, whereas the climbing ones must go to *Eu-Cryptolepis*.

Cryptolepis (§ Ectadiopsis) **Elliotii** Schltr., n. sp. Suffrutex erectus, bipedalis et ultra, glaberrimus, valde ramosus; ramis erectis teretibus scabridiusculis, sparsim foliatis; foliis ovato-oblongis vel ovato-ellipticis acutis vel breviter acuminatis, marginibus revolutis, subtus pallidioribus, brevissime petiolatis vel subsessilibus, 2–3 cm. longis, medio 1–2 cm. latis; floribus in racemis terminalibus subcorymbosis, pallide ochroleucis; calycis segmentis oblongis vel suborbicularibus obtusissimis, tenuissime ciliatis, quam corollæ tubo paulo brevioribus, 0·1 cm. longis; corollæ lobis erecto-patentibus, 0·3 cm. longis, basi ad medium usque in tubum connatis, oblongis obtusiusculis utrinque glabris; coronæ squamis carnosis minutis in medio tubo insertis subteretibus apice

obtusis subincurvis; antheris more generis conniventibus, filamento brevissimo, subhastatis, apice obtusis exappendiculatis; polliniis subclavatis obtusissimis, basi sensim in caudiculam angustatis, glandula subrotunda bene conspicua, pro magnitudine polliniorum satis magna; stigmatis capite breviter cylindrico.

Urundi Hills, 4000–5000 ft., No. 8372; east side of Albert Edward Lake, on dry grassy hills, No. 8066.

At first sight the present species may easily be mistaken for the Angolan *C. myrtifolia* Schltr. (*Ectadiopsis myrtifolia* Baill.), but the different nervation of the leaves and the mostly lateral inflorescence sufficiently distinguish the latter.

CRYPTOLEPIS (§ ECTADIOPSIS) WELWITSCHII Schltr. *Ectadiopsis Welwitschii* Baill. in *Bull. Soc. Linn. Par.* ii. 803.

Stevenson Road, alt. 5000–6000 ft., Nov., Nos. 8314, 8264.

RAPHIONACME Harv.

Raphionacme excisa Schltr., n. sp. Herba erecta, humilis, ramosa, vix spithamæa, ramis erectis vel erecto-patentibus tenuissime puberulis sparsim foliatis; foliis patentibus vel erecto-patentibus linearibus obtusiusculis, utrinque plus minus puberulis basi in petiolum brevissimum angustatis, vel potius subsessilibus; floribus in cymis laxis paucifloris pro genere mediocribus, patentibus vel erecto-patentibus; calycis segmentis lanceolato-triangulis acutissimis, 0·1 cm. longis, extus sparsim puberulis, corollæ lobis erecto-patentibus basi tertia parte in tubum brevem subcylindricum connatis, ovato-oblongis obtusis utrinque glabris, vel extus subinconspicue puberulis, 0·6–0·7 cm. longis, medio fere 0·3 cm. latis; coronæ squamis corollæ ad medium tubi fere adnatis circuitu suborbicularibus vel oblatis lobo medio erecto filiformi longissimo, lobis lateralibus inflexis; antheræ stipite longissimo, lineari, anthera subhastata appendice brevi subundulato obtusiusculo vel subacuto: polliniis circuitu subspathulatis, apice excisis, supra medium sensim in caudiculam linearem angustatis, marginibus involutis, glandula subrotunda, obtusa; stigmatis capite breviter cylindrico.

Single specimen, without locality.

In habit very nearly allied to *R. Browniana* Scott Elliot, from Sierra Leone, but distinguished by the corolla as well as the corona. Judging from the dried specimens, the flowers appear to have been greenish purple. They resemble in size and shape those of *R. divaricata* Harv.

Raphionacme splendens Schltr., n. sp. Herba erecta, humilis, simplex vel subsimplex; caule stricto vel plus minus flexuoso, tereti, subaphyllo, basi glabrescente apicem versus velutino-puberulo; foliis minutis valde distantibus, linearibus vel lineari-subulatis, acutis, velutinis, erectis, 0·5–0·7 cm. longis, vix 0·1 cm. latis; floribus pro genere maximis, speciosis, erectis, in fasciculis extra-axillaribus paucifloris, graciliter pedicellatis; pedicello tereti-velutino; calycis segmentis ovatis acuminatis, tenuissime ciliatis, extus puberulis, pro magnitudine corollæ minimis, vix 0·3 cm. longis, infra medium vix 0·2 cm. latis; corolla subrotata, lobis patentibus vel patulis, basi in tubum brevem connatis, oblongis obtusis, 2·3–2·5 cm. longis, medio vix 0·7 cm. latis, extus tenuissime puberulis, intus glaberrimis, tubo vix 0·5 cm. excedente; coronæ squamis basi oblatis, ad apicem tubi adnatis, lobo medio erecto, filiformi, elongato, gynostegium altum multo excedente, lateralibus inflexis, brevissimis rotundatis; antheris longissime stipitatis apice more generis cohærentibus, appendice lineari, obtusiusculo, bene conspicuo; polliniis circuitu subspathulatis, lamina lanceolata alte (usque infra medium) bifida, laciniis linearibus acutis, stipite lineari marginibus inflexis; glandula lanceolata, basi truncata apice inflexa subacuta; capite stigmatis breviter conico.

No number or locality.

The finest species of this interesting genus, which extends from the Cape right on to the Soudan and Abyssinia. The showy flowers are in the dried specimens of a rosy pink, but I think it probable that in the living state this colour is much deeper, and very likely more purple, as we find it in several other Raphionacmes. I am not quite sure whether the leaves will prove to be constantly so very small as in the specimens at hand, for I have often noticed in *Raphionacme* that they vary very much in size and shape; for instance, in *R. divaricata* Harv., from South Africa, which is sometimes almost leafless, although it is quite as often covered with very many well-developed ovate leaves. Another most singular and distinct character of *R. splendens* is found in the deeply bifid (almost bipartite) pollinia.

Raphionacme volubilis Schltr., n. sp. Suffrutex volubilis, alte scandens, plus minus ramosa, ramis teretibus verrucosis, sparsim foliatis; foliis patentibus vel erecto-patentibus lineari-lanceolatis vel lanceolato-oblongis, breviter acutis, vel obtusiusculis, basin versus attenuatis, subsessilibus vel breviter pedicellatis, utrinque velutinis, 2–3·5 cm. longis, supra medium 0·5–0·7 cm. latis; floribus pro genere vix inter mediocres, viridibus nutantibus, in fasciculis subextra-axillaribus paucifloris, rarius in cymis breviter pedunculatis umbellæformibus; pedicellis brevibus dense velutinis, floribus subæquilongis; calycis segmentis lanceolato-triangulis acutis, subtomentoso-velutinis, 0·1 cm. longis; corollæ subcampanulatæ lobis erecto-patentibus oblongis obtusis, basi tertia parte in tubum brevem connatis, utrinque glabris, 0·5 cm. longis, medio fere vix 0·3 cm. latis; coronæ squamis tubo corollæ supra medium adnatis oblatis, lobo medio erecto, filiformi elongato, lateralibus abbreviatis inflexis; antheræ stipite longo lineari, anthera ovato-lanceolata, appendice basi apiculæformi; polliniis clavatis, lamina late oblonga obtusissima, sensim basi in stipitem brevem linearem attenuata; glandula subrotunda; stigmatis capite breviter conico.

No number or locality given.

It is interesting to see that the climbing species of *Raphionacme* are not confined to South Africa, whence comes the only previously known climbing species of the genus, *R. Flanagani* Schltr. (from which *R. scandens* N.E.Br. is not distinct). *R. Flanagani*, however, is at once recognized by the different inflorescence, much larger and broader leaves, and the different corona. In the latter character *R. volubilis* stands nearer to the two species described above than to

R. Flanagani. The corona-scales are oblate in outline, with only the middle filiform lobe produced, whereas the two lateral ones are turned down inwardly, and completely connate with the body in such a way that the corona-scales appear to be furrowed in the middle of the inner side. This furrow, however, is occupied by the stalk of the anther.

PLEUROSTELMA Schltr., n. gen. Calyx alte 5-partitus, intus subinconspicue 5-glandulosus, lobis lanceolatis acutis. Corolla alte 5-fida, etubulosa, lobis erecto-patentibus ovato-oblongis obtusis. Coronæ foliola inter se libera linearia erecta valde compressa, apice lacerata, facie interiore in appendicem e basi deflexa curvato-adscendentem filiformem elongatum producta, in sinubus petalorum, antheris opposita. Antheræ breviter stipitatæ apice conniventes exappendiculatæ; polliniis parvuli-clavatis obtusis. Stigma capitatum.

Pleurostelma africanum Schltr., n. sp. Suffrutex volubilis alte scandens, plus minus ramosa vel subsimplex; ramis teretibus remote foliatis, glaberrimis; foliis patentibus angustissime linearibus acutis marginibus revolutis, basi in petiolum brevissimum angustatis, 4–6 cm. longis, utrinque glaberrimis; floribus in cymis laxis subcorymbosis, extra-axillaribus, plurifloris; pedunculo gracili, pedicellis filiformibus glaberrimis floribus subæquilongis; floribus (fide collectoris) niveis, glaberrimis; calycis segmentis minutis lanceolato-triangulis acutis glabris, vix 0·1 cm. longis; corollæ lobis erecto-patentibus lanceolato-oblongis obtusis, utrinque glabris, 0·7 cm. longis, medio fere 0·3 cm. latis; coronæ foliolis erectis linearibus valde compressis, apice setaceo-elongatis, facie interiore in appendicem e basi refracta curvato-adscendentem demum erectum squamas multo excedentem filiformem productis; antheris breviter stipitatis apice conniventibus, lanceolatis obtusiusculis; polliniis parvulis spathulatis obtusis, glandula subrotunda pro magnitudine polliniorum satis magna; stigmatis capite obtusato.

Mombassa, "Red sand, a climber with white flowers," No. 6175.

This is the type of a most distinct new genus, quite unlike any other in the structure of the corona-scales. It is difficult to suggest any affinity for it at present; but doubtless it must be placed, according to Bentham's arrangement of the order, near *Raphionacme*, a genus very different in coronal structure. The habit of the species is also very remarkable, so much so, that at first I doubted whether it was an Asclepiad at all. The corona-scales appear to be very thin, and nearly membranous. It was impossible for me to ascertain whether the appendages of the corona-scales are all coherent at the top, or whether they are free, for, on account of their thin texture, they seem to stick together whenever the smallest drop of water touches them.

SECAMONE R. Br.

Secamone zambesiaca Schltr., n. sp. Frutex volubilis, alte scandens; ramis teretibus plus minus verruculosis, glaberrimis, remotius foliatis; foliis patentibus ovatis vel ovato-ellipticis, acutis, margine plus minus undulatis, utrinque glabris, 3–5 cm. longis, infra medium 2–3 cm. latis, petiolo gracili 0·5–0·8 cm. longo; cymis axillaribus oppositis, laxe paucifloris, quam foliis duplo vel plus duplo brevioribus; pedunculo tereti, glabro, 0·8–1·2 cm. longo, pedicellis gracilibus inæquilongis, quam calyce tamen semper longioribus; floribus pro genere minoribus, subrotatis, 0·4 cm. diametro; calycis segmentis oblongis obtusis, quam corolla triplo brevioribus, margine tenuissime (subinconspicue) ciliatis; corollæ lobis ovato-oblongis obtusis, concavis, utrinque glaberrimis, basi usque infra medium in tubum late campanulatum connatis, 0·2 cm. longis, medio fere vix 0·1 cm. latis; coronæ foliolis antherarum dorso alte adnatis carnosis, e basi sublanceolata rostrato-angustatis, quam antheris paulo brevioribus, obtusiusculis; antheris polliniisque generis, stigmatis capite obtusato, antheras conspicue excedente.

Shire-Zambesi, Chiroma, January, No. 2803.

The affinity of our plant is with *Secamone sansibariensis* K. Sch., from which, however, it differs in the head of the stigma, which in our plant distinctly exceeds the anthers, whereas in *S. sansibariensis* it is equal to them in height. *S. Stuhlmannii* K. Sch., also from German Eastern Africa, is distinguished at once by the hairy branches and inflorescence, and the pubescent corolla-lobes. *S. Schweinfurthii* K. Sch. has smaller flowers and a different corona, as well as a very distinct stigma. The leaves of *S. zambesiaca* turn bright green in drying, a character which is also mentioned by Schumann in the description of his *S. sansibariensis*.

GLOSSONEMA Dcne.

Glossonema Elliotii Schltr., n. sp. Herba velutina decumbens, e basi ramosa; ramis teretibus subtomentoso-velutinis remote foliatis; foliis patentibus vel erecto-patentibus, ovatis vel ovato-lanceolatis acutis, utrinque velutinis, 3–5 cm. longis, infra medium 1–2·5 cm. latis, petiolo gracili velutino 1–1·5 cm. longo; floribus in fasciculis extra-axillaribus alternantibus, 4–7-floris; pedicellis villosis, inæquilongis, quam floribus tamen semper plus minus longioribus; calycis segmentis lanceolatis vel lineari-lanceolatis acutis, villosis, quam corolla duplo brevioribus; corolla sulphurea subrotata, 0·5 cm. diametro; lobis ovato-oblongis vel ovato-ellipticis, obtusiusculis, basi tertia parte in tubum brevem connatis, 0·3 cm. longis, medio fere vix 0·2 cm. latis; coronæ squamis tubo corollæ infra apicem adnatis erectis linearibus, apice supra stigma inflexis, quam corolla brevioribus; antheris incumbentibus subquadrangularibus, marginibus cartilagineis alæformibus brevibus, appendice hyalino in stigma inflexo, rotundato, marginibus loculorum profunde exciso-emarginatis; polliniis pedunculis oblongis paulo compressis, caudiculis margine interiore supra medium affixis, obtusis, caudiculis filiformibus patulis, glandulæ oblongæ obtusæ juxta basin insertis, glandula pro magnitudine polliniorum minima.

Kikumbuliyu, Nov. 26, No. 6184.

The first species of the genus *Glossonema* known as yet from the Southern Hemisphere, although it was to be expected from these regions. In structural characters it is at once distinguished from the others by the incumbent anthers, which in this respect resemble

those of the genus *Sphærocodon*. *G. nubicum* Dcne. may be compared with our species, but is distinguished by the leaves and the very different inflorescence. The leaves of the present plant are remarkable in the genus for their long petioles; the fruits, which might have proved of interest, are unfortunately not yet developed in these specimens. I have great pleasure in dedicating this evidently rare plant to its indefatigable discoverer, Mr. Scott Elliot.

MARGARETTA Oliv.

MARGARETTA ROSEA Oliv. in *Trans. Linn. Soc.* xxix. (1875), 112, t. 76 f.

Dry burnt ground, Nandi (Nile), Jan., No. 7048; Urundi, Sept., No. 8370.

MARGARETTA WHYTEI K. Sch. in *Engl. Flor. Ost-Afr.* 323 (1895).

Shire Highlands, Milanji, Dec., No. 8666; Shire Highlands, Mandala to Matope, Dec., No. 8442.

SCHIZOGLOSSUM E. Mey.

Schizoglossum debile Schltr., n. sp. Herba erecta, gracillima, 50–100 cm. alta parum ramosa; caule flexuoso debili, basi glabrescente apicem versus plus minus velutino-tomentoso; ramis alternantibus remote foliatis; foliis erectis glabris angustissime linearibus acutis, marginibus revolutis, basi sensim in petiolum brevissimum tenuissime velutinum attenuatis, 1–5 cm. longis; floribus illis *S. filifolii* Schltr. simillimis, vix majoribus viridibus, in fasciculis extra-axillaribus alternantibus, 4–8-floris, pedicellis erecto-patentibus filiformibus inæquilongis, tenue pilosis; calycis segmentis anguste lanceolatis acutis pilosis, quam corolla duplo brevioribus; corolla subrotata, vix 0·5 cm. diametro, lobis oblongis obtusiusculis, 0·2 cm. longis, medio vix 0·1 cm. latis, utrinque plus minus pilosis, vel intus glabrescentibus; coronæ foliolis e basi suborbiculari ligulato-attenuatis, apice obtuse trilobulatis, intus medio e basi ligula dorso alto foliolo adnata apice bifida foliolum excedente in stigma inflexa donatis; anthera subquadrato-oblonga, marginibus cartilagineis angustis basi haud ampliatis, loculorum longitudine, appendice hyalino suborbiculari apice in stigma inflexo, marginibus loculorum emarginatis; polliniis anguste pyriformibus, caudiculis divaricatis subfiliformibus, glandulæ angustæ æquilongæ basi insertis.

Dry sandy soil, on the plateaux at Buddu, Feb., No. 7471.

Nearly allied to the South African *S. filifolium* Schltr., which differs from our plant in the shorter unbranched stems and acuminate suborbicular corona-scales. The pollinia also are larger in *S. debile*, the caudiculæ shorter, and the gland much narrower. The anthers are proportionately broader. The free margins of the inner ligula, which is connate nearly to the top with the corona-scales, form two lamellæ on the middle of the inner side of the latter.

Schizoglossum Elliotii Schltr., n. sp. Herba gracillima erecta, parum ramosa, 50–70 (?) cm. alta; caule basi glabrato apicem versus plus minus piloso; ramis alternantibus erectis,

teretibus, pilosis, remote foliatis; foliis angustissime linearibus acutis, marginibus revolutis, supra tenue pilosis, subtus glabrescentibus, basi subsessilibus vel in petiolum brevissimum angustatis, 2–4 cm. longis; floribus pro genere minoribus viridibus in fasciculis extra-axillaribus alternantibus, 3–6-floris; pedicellis pilosis filiformibus erecto-patentibus vel patulis, post æstivationem decurvis; calycis segmentis lanceolatis acutis pilosis, quam corolla duplo brevioribus; corolla subrotata lobis oblongis obtusis, utrinque pilosis, intus medio brevius quam margine, 0·2 cm. longis, medio vix 0·2 cm. latis; coronæ foliolis e basi oblata medio in ligulam erectam apice acuto supra stigma inflexam productis, inter longitudinaliter lamellis 2 parallelis ornatis; anthera subrhomboidea, marginibus cartilagineis subalæformibus basi oblique truncatis, loculis æquilongis, appendice hyalino subrotundo apice obtusissimo, in stigma inflexo; polliniis pendulis oblique pyriformibus obtusis paulo compressis, parvulis, caudiculis, filiformibus, basi divaricatis medio genuflexis patulis, glandulæ oblongæ, quam polliniis duplo minori, basi affixis.

No number or locality.

In habit this species might easily be mistaken for *S. Woodii* Schltr. or *S. altissimum* Schltr., both natives of Eastern South Africa. It differs from both in the shape of the corona-scales and the anthers. The pollinia would bring it nearer to *S. altissimum* than to *S. Woodii*. *S. abyssinicum* Schltr. (*Lagarinthus abyssinicus* Hochst.) *S. angustissimum* K. Sch., and *S. elatum* K. Sch., which are also allies, have quite differently-shaped corona-scales. There is only a single specimen of this species in the collection, without locality or number; it was originally mixed with *S. erubescens* Schltr., No. 8671, but I doubt whether it comes from the same locality. The top of the plant is broken off, so that the height of the stem as given above needs confirmation.

Schizoglossum erubescens Schltr., n. sp. Herba gracillima, erecta, simplex, 30–50 cm. alta; caule flexuoso basi glabrato apicem versus puberulo, summo apice tomentoso, remote foliato, tamen densius ac in speciebus supra descriptis; foliis angustissime linearibus acutis superne scabris, subtus glaberrimis, erecto-patentibus, marginibus revolutis, in petiolum brevissimum angustatis; floribus in fasciculis extra-axillaribus alternantibus 2–5-floris, pedicellis brevissimis inæquilongis, filiformibus, puberulis; calycis segmentis lanceolatis acutis pilosis, quam corolla duplo brevioribus; corollæ rotatæ lobis oblongis obtusiusculis vel subacutis, extus glabris, intus tenue puberulis, 0·2 cm. longis, medio 0·1 cm. latis; coronæ foliolis suborbicularibus, apice in apiculum acutissimum erectum bene longum productis, intus infra apicem ligula lanceolata acuta, supra stigma inflexa, quam apiculo duplo brevius donatis, medio longitudinaliter lamellis 2 parallelis præditis; antheris oblongis, marginibus cartilagineis basi subampliatis obtusis, quam loculis sublongioribus, appendice hyalino erecto suborbiculari supra stigma inflexo, marginibus loculorum emarginatis; polliniis pendulis, angustius subfalcato-oblongis, obtusis, caudiculis brevibus divaricatis, filiformibus, glandulæ minutæ anguste oblongæ obtusæ basi insertis,

Shire Highlands, Milanji, Dec., No. 8671.

This species is very nearly allied to the South African *S. carinatum* Schltr., but has more the habit of *S. venustum* Schltr., although the very different flowers of the latter are more than twice as large as in the former. The chief differences between our plant and *S. carinatum*, excepting the habit, are to be found in the corona-scales and the pollinia. The corona-scales of *S. carinatum* are shortly acuminate, with a single ligula on the inner side, which is about as long as the acumen of the corona-scales, but covers nearly the whole inner surface; whereas in the present species we have an elongate apiculus, and inside a small lanceolate ligula, which is much shorter than the apiculate production of the scales; below this inner ligula we have here two narrow parallel lamellæ on the middle of the inner side, a character which is totally wanting in *S. carinatum*. The pollinia are very different in both species.

Schizoglossum Nyassæ Britt. & Rendle in *Trans. Linn. Soc.* ser. 2, iv. (1894), 26.

Shire Highlands, Milanji, Dec., No. 8666.

A most distinct species, allied to *S. fasciculare* Schltr., but a much stronger-growing plant. Mr. Elliot's specimen is much larger than the type in the British Museum.

(To be continued.)

AN ACCOUNT OF THE GENUS ARGEMONE.

By D. Prain.

Continued from p. 209.)

1. Argemone fruticosa Thurber. Glaberrima valde glauca; ramis patentibus lignosis undique foliosis inermibus; foliis crassis ilicinis oblongis sinuatis margine spinosis; floribus inter bracteas 3–4 foliaceas versus apicem ramorum brevissimorum aggregatas terminalibus; sepalis sub apicem in cornu tereti valde spinosum productis, extus aculeis perpaucis parvulis munitis; petalis sulphureis obovatis apice subtruncatis basi cuneatis; capsulis sulcatis basi rotundatis apice angustatis, stylo brevissimo coronatis, valvis 4–5 densius aculeatis, aculeis subæqualibus basi magnopere tuberculato-dilatatis, valvis fere ad basin usque dehiscentibus, seminibus globosis minoribus vix punctulatis. *Argemone fruticosa* Thurber ex A. Gray in *Mem. Am. Ac.* n.s. v. [*Plant. Thurber.*] 306 (1854); Walp. *Ann.* iv. 170 (1857); Torrey, *Mex. Bound.* 31 (1858); Hemsl. *Biol. Centr. Amer.*, *Bot.* i. 26 (1879); S. Wats. *Proc. Am. Acad.* xviii. 318 (1882).

America: Mexico borealis; Coahuila, in jugo Sa. Peña, *Thurber*, n. 844! Sn. Lorenzo de Laguna, *Palmer*, n. 21!

Suffrutex perennis 45–75 cm. ramis divergentibus dense lignosis demum foliorum cicatricibus squarrosis, junioribus albo-glaucescentibus nunquam aculeatis; foliis coriaceis nervo centrali subtus parce aculeatis ceterum glaberrimis, margine ilicino-spinosis 2·5–4

cm. longis; bracteis foliaceis 2–2·5 cm.; sepalis 2 cm.; alabastris 1·25 cm. latis; floribus majusculis 7–8 cm. latis; capsulis 1·5–2 cm. longis; seminibus 2 mm. latis.

This very distinct species cannot possibly be confused with any of the others.

2. Argemone mexicana Linn. Glaberrima glaucescens ramis ascendentibus gracilibus cauleque undique foliosis aculeis ascendenti-patentibus sparse armatis vel glabris; foliis herbaceis sinuato-pinnatifidis margine cnicoideo-spinosis, venis albidis; floribus inter bracteas 2–3 foliaceas ad apicem ramorum floralium perbrevium (var. *typica*) vel plus minus elongatorum (var. *ochroleuca*) aggregatas singulis terminalibus; sepalis sub apicem in cornu teretiformi læve productis, extus aculeis paucis munitis; petalis flavis vel aurantiacis (var. *typica*) vel ochroleucis (var. *ochroleuca*) obovatis apice semicircularibus basi sæpissime late cuneatis; capsulis late oblongis 4–6 valvis; stylo subnullo (var. *typica*) vel distincto (var. *ochroleuca*), valvis coriaceis sparse aculeis subæqualibus in lineas 3 instructis armatis vel raro inermibus, aculeis basi parum dilatatis; seminibus globosis distincte reticulatis.

Var. *typica:* stylo subnullo, stigmatum lobis suberectis, capsula basi apiceque rotundata, floribus aurantiacis vel luteis, ramis floralibus magnopere abbreviatis. *Argemone mexicana* [Tournef. *Elem.* 204, t. 121 (1694), et *Inst. Rei Herb.* 239, t. 121 (1700); Merian. *Insect. Surinam.* t. 24 (1705); Boerhaave, *Ind. Alt.* i. 280 (1720); Sabbati, *Hort. Rom.* 4, t. 65 (1745).] Linn. *Sp. Pl.* i. 508 (1753), et *Syst. Nat.* ii. 1073 (1759); Mill. *Dict.* i. 35, t. 50 (1760); Lamk. *Encyc. Meth.* i. 247, et *Ill.* t. 452 (1784); Gaertn. *Fruct.* i. 287, t. 60 (1788); Vitm. *Summa Plant.* iii. 297 (1789); Aiton, *Hort. Kew.* ed. 1, ii. 255 (1789); Brez, *Flor. Insect.* 211 (1791); Curt. *Bot. Mag.* t. 243 (1794); Willd. *Sp. Pl.* ii. 1148 (1799); Lestib. *Bot. Belg.* ed. 2, iii. pt. 2, 131 (1799); Pers. *Synops.* ii. 62 (1807); Schultz, *Obs.* 97 (1809); Merr. *Handb. d. Pflanzenkund.* i. 244 (1809); Dum. de Cours. *Bot. Cultiv.* ed. 2, iv. 468 (1811); Aiton, *Hort. Kew.* ed. 2, iii. 290 (1811); Stokes, *Bot. Mat. Med.* iii. 195 (1812); Vig. *Hist. Nat. Pav.* 49, f. 2*b*, & f. 4 (1814); Lunan, *Hort. Jamaic.* ii. 312 (1814); Pursh, *Fl. N. Amer.* ii. 366 (1814); Hornem. *Hort. Hafn.* 489 (1815); Nutt. *Gen.* ii. 9 (1818); DC. *Syst. Veg.* ii. 86 (1821); Elliott, *Bot. Carol. & Georg.* ii. 13 (1824); Spreng. *Syst.* ii. 604 (1825); Darlington, *Florul. Cestric.* 57 (1826); St. Hil. *Flor. Bras.* ii. 118 (1829); Wall. *Cat.* 8126, sched. E. exclus. (1830); Roxb. *Flor. Ind.* ii. 571 (1832); Hook. *Journ. Bot.* i. 190, quoad Drummond n. 15 tantum (1834); Wight & Arn. *Prodr.* i. 18 (1834); Barton, *Flor. Cestric.* 316 (1837); Blanco, *Flor. de Filip.* 454 (1837); Torrey & Gray, *Fl. N. Amer.* i. 61, vars. β. γ. exclus. (1838); Wight, *Ill.* t. 11 (1840); Eaton & Wright, *N. Amer. Bot.* 134 (1840); Walp. *Rep.* i. 109 (1842); A. Gray, *Gen.* i. 112, t. 47 (1848); Seem. *Bot. Herald*, 23 (in parte), 67, 78, 363 (1852); Schmidt, *Flor. Cap. Verd. Is.* 261 (1852); Richard, *Flor. Cub.* ii. 23 (1853); Schlecht. in Heller, *Reis. Mexic.* 417 (1853); Hook. f. & Thoms. *Flor. Ind.* i. 251 (1855); Miq. *Flor. Ind. Bat.* i. pt. 2, 92 (1859); Chapm. *Flor. S. Unit. St.* 21, plantâ albiflorâ exclus.

(1860); Klotzsch in Peters, *Reis. Mossamb.* 169 (1861); Benth. *Flor. Hong Kong*, 15 (1861); Griseb. *Flor. W. Ind.* 13 (1864); Mart. *Flor. Bras.* xiii. 315 (1865); A. Gray, *Manual*, 59, plantis albifloris exclus. (1867); Oliv. *Flor. Trop. Afr.* i. 54 (1868); Hook. f. & Thoms. *Flor. Brit. Ind.* i. 117 (1872); Baker, *Flor. Maurit.* 5 (1877); Baillon, *Hist.* iii. 113 (1877); Hemsl. *Biol. Cent. Amer. Bot.* i. 27, in parte, plantis Mexicanis exclus. (1879); Bello, *Ann. Soc. Esp. Hist. Nat.* x. 235 (1881); Bailey, *Queensland Flora*, 11 (1883); Vallot, *Flor. Senegal*, 69 (1883); Stahl, *Flor. Porto Rico*, ii. 33 (1884); Bailey, *Pois. Pl. Queensland*, t. 3 (1887); Britt. & Rusby, *Trans. N. Y. Acad. Sc.* vii. 7 (1887); Balf. f. *Bot. Socotr.* 3 (1888); Prantl & Kundig, *Engl. Nat. Pflanzenf.* iii. pt. 2, 141, fig. 83B exclus. (1889). *A. spinosa* Moench. *Meth.* 227 (1784); Gater. *Plant. Montaub.* 99 (1789); Shecut, *Flor. Carol.* i. 202 (sphalmate *spinosis*) (1806). *A. versicolor* Salisb. *Prodr.* 376 (1796). *A. sexvalvis* Stokes, *Bot. Mat. Med.* iii. 195 (1812). *A. vulgaris* Spach, *Hist.* vii. 26 (1839). *A. mexicana* α. *lutea* O. Kuntze, *Revis.* i. 13, var. *parviflora* inclus. (1891). *Argemone* Browne, *Hist. Jamaic.* 244 (1789). *Echtrus trivialis* Lour. *Flor. Coch. Chin.* i. 344 (1790).

[*Papaver spinosum* C. Bauh. *Phytopin.* 311 (1596); Clus. *Hist.* ii. 93 c. ic. (1601); C. Bauh. *Prodr.* 92 c. ic. (1620), et *Pinax*, 171 (1623); J. Bauh. *Hist.* 397 c. ic. (1651); Sloane, *Hist. Jamaic.* i. 196 (1707). *Papaver spinosum flore luteo Papaveri cornuto simili*, Imperat. *Hist. Nat.* 873 c. ic. (1599). *Papaver spinosum Americanum* Parkins. *Theatr.* 366, 367 c. ic. (1640); Weinm. *Phytol.* iv. 40, t. 796*d* (1745). *Papaver campestre spinosum* Chabr. *Ic. & Sciagr. Stirp.* 459 c. ic. (1677). *Papaver spinosum luteum foliis venis albis notatis* Morison, *Hist. Univ.* i. 277, § 3, t. 14, f. 5 (1680). *Papaver spinosum flore luteo* Barrel. *Obs.* 47, t. 1141 (1714). *Carduus chrysanthemus peruanus* J. Gerard, *Herbal*, 993, c. ic. (1597).]

In insulis Indicis occidentalibus indigena; ad oras sinus Mexicani Oceanique Atlantici Americanas parcius, in Africâ totâ, Asiâque austro-orientali late inquilina.

[*America:* Antilles majores; Cuba, *Ramon da Sagra*! Jamaica, *Grisebach*! Hayti, *Jaeger*! Porto Rico, *Wydler* n. 239! Antilles minores; St. Thomas, *Moller*! *Eggers*! Antigua, *Antonio*! *Findley*! Martinique, *Hahn*! St. Lucia, *Anderson*! St. Vincent, *Smith*! Bahamas, *Dale*! Florida; Key Is., *Herb. Shuttleworth* (spp. normalia cum spp. "*leiocarpa*" commixta)! Frederick Co., *Nuttall in Herb. Durand*! Louisiana; apud New Orleans, *Drummond* n. 15! Mexico; ad Tampico, *Berlandier* n. 2! ad Vera Cruz, *Jurgensen*! *Violet d'Aoust*! *Kerber*! Cordoba, "dans les rues," *Bourgeau* n. 2309! Yucatan, *Linden*! Cozumel ins., *Gaumer*! Guatemala; ad Duenas, *Salvin*! Costa Rica (locus exactus nec notatus), *Endres*! N. Grenada; Panama, *Seemann*!; "in locis calidioribus," *Triana*! Venezuela; prope Tovar, *Fendler*! ad Cumana, *Bonpland*! Guiana; Surinam, *Ic. Meriani*! *Focke*! *Hortmann*! Brazil; ad ripas Rio Madeira, "*Herb. Paris*"! in prov. Piauhuy, frequens (spp. "*leiocarpa*"), *Gardner*! Bahia, prope mare, *Glocker*! apud Rio Janeiro, *Gaudichaud* n. 1053! *Glaziou*! *Miers*! Uruguay; Monte Video, prope mare (spp. cum var. *ochroleuca* commixta), *St. Hilaire*!

Insulæ Atlanticæ: Bermudas, *Moseley*! Canaries, *L. Monteiro*! *Bourgeau* n. 209! 678! *Lowe*! *Hohenacker*! *Perez*! Cape Verde Islands, *Hooker*! "*Herb. Drake*"! *Savatier*! Ascension, *Loomis*! St. Helena, *Burchell*!

Africa: Algeria australis, *Deflers*! Senegal, *Adanson*! *Perrottet*! *Leprieur*! *Dupuis*! Sierra Leone, *H. H. Johnston*! *Scott Elliot*! Dahomey, *Burton*! Yoruba, *Millson* (spp. "*leiocarpa*")! Caput Bonæ-Spei, *Sonnerat*! *MacOwan*! Delagoa, *J. Monteiro*! Zanzibar, *Speke*! *Hildebrandt*! *Boivin*! Mombasa, *Taylor*! Socotra, *Schweinfurth* n. 268! *Balfour*! Egypt, *Wiest*!

Insulæ Mascarenses: Madagascar, *Baron*! Rodriguez, *Balfour*! Seychelles, *Wright*! Bourbon, *Richard*! Comoro; Mayotte, *Boivin*! Mauritius, *Commerson in Herb. Lamarck et Herb. Jussieu*! *Boivin*!

Asia: India ubique; Himalaya occident., *Royle*! *Strachey & Winterbottom*! Nepal, *Wallich*! Panjab, *Jacquemont* n. 1527! Plan. Ganget. Sup., *Edgeworth*! *Thomson*! Bengal, *Roxburgh*! *Hamilton*! *Wallich*! *Hooker*! *Clarke*! Gwalior, *Maries*! Tranquebar, "*Fratres Missionis*"! Bellary, *Beddome*! Nilghiri Mts., *Wight*! Madras, *G. Thomson*! Ceylon, *Sonnerat*! Malaya; Penang, *Ic. in Herb. Kew*! Java, *Forbes*! Sumbawa, *Zollinger* n. 3337! China; Hong-Kong, *Wright*! *Lamont*! *Hance*! *Krone*! *Furet*!

Australia: Queensland, *Scortechini in Herb. Calcutt.*!]

Var. *ochroleuca* Lindl.: stylo distincto, stigmatum lobis divergentibus, capsula utrinque plus minus attenuata, floribus ochroleucis, ramis floralibus plus minus elongatis. *Argemone mexicana* var. *ochroleuca* Lindl. *Bot. Reg.* t. 1343 (1830). *A. ochroleuca* Sweet, *Brit. Flow. Gard.* iii. t. 242 (1828); Walp. *Rep.* i. 110 (1842); Loud. *Hort. Brit.* ed. 2, Suppl. 472 (1850); Hemsl. *Biol. Cent. Amer. Bot.* i. 27 (1879). *A. sulphurea* Sweet ex Loud. *Hort. Brit.* 216 (1830). *A. Barclayana* Penny MSS. in *Hort. Eps.* ined. ex Loud. *Gard. Mag.* vi. 115 (1830). *A. mexicana* var. *β.* Torrey & Gray, *Flor. N. Amer.* i. 61 (1838); C. Gay, *Flor. Chilen.* i. 100 (1845). *A. mexicana* var., S. Wats. *Proc. Amer. Acad.* xxiv. 38 (1889). *Argemone mexicana* Hook. *Bot. Misc.* ii. 208 (1831); *Voy. Sulph.* 64 (1844); Engelm. *Wisliz. Rep.* 112 in parte (1848); Seem. *Bot. Herald*, 268 (1852); Coult. *Contrib. U. S. Nat. Herb.* i. 65 (1890), et ii. 12 in parte (1891); Morong, *Bull. Torrey Bot. Cl.* xviii. 48 (1891), vix Linn.

[*Chicalotl* Hernand. *Hist* 215, plantâ floribus candicantibus exclus. (1651).]

In Mexico Texasque indigena, in America australi præsertim in ditionibus versus Oceanum Pacificum spectantibus late, nec non in Australia sparse, inquilina.

[*America:* Mexico boreali-occidentalis et California inferiore (spp. *parviflora* = *A. Barclayana*), Guaymas, *Palmer* n. 105! La Paz, *Palmer* n. 55! (sine loco exacto), *Exped.* '*Sulphur*'! Texas occidentalis Mexicoque (spp. floribus majusculis = *A. ochroleuca* vera). Texas; San Antonio, *Herb. Paris*! Mexico borealis; Monterey, *Herb. Carey* (*Coulter* n. 662)! Chihuahua, *Pringle* n. 257 (sub nom. *A. mexicana* distrib.)! Parral, *Schumann*

n. 272! Mexico australis; prope Mexico, *Bourgeau* n. 6! in monte olim ignivomitante Batea, *Guillemin-Terraye*! Plalpuquahua, *Graham* n. 1830! Orizaba, *Broteri* n. 786! *Meissner*! Oaxaca, prope Pintepo, *Galeotti* n. 4744! America australis (spp. omnia *grandiflora*): Ecuador; apud Sacha, *Grisou*!, prope Latacunga, *Remy*! *Jameson* n. 672! Peru; prope Callao, *Barclay*! *Gaudichaud*! n. 143!, apud Lanya, *Barclay*! Bolivia; prope Sorata, *Mandon* n. 889! *Mig. Bang*!, apud Catanga, *Pentland*! Yunga, *D'Orbigny*! Chili; ad Cobija, *Gaudichaud in Herb. Delessert*! Coquimbo, *Bridges*! Valparaiso, *Nuttall*! Quilotta, *C. Gay* (spp. cum *A. platyceras* var. *chinensis* commixta)! Paraguay; in urbe Corrientes et in aliis locis sed semper in vicinitate hortorum missionum, *Bonpland*! Uruguay; Monte Video, prope mare (spp. cum *A. mexicana* vera commixta), *St. Hilaire* n. 2416!, prope littora, *Courbon* n. 539! Argentina; in urbe Cordoba, *Hieronymus* n. 199! Pampas, frequens, *Gillies*!

Australia: in urbe Sydney, "George Street," etiam in collibus "Surrey Hills," nuncupatis, *Verreaux* n. 227 *in Herb. Paris*!]

Herbacea gracilis vel sæpius robusta 45–90 cm. alta, ramis fastigiatis vel patentibus, foliis 8–20 cm. longis, 2·5–7·5 cm. latis; bracteis sub flores 3 cm. longis, 1–1·5 cm. latis; sepalis 2 cm. longis, cornu 6–8 mm. longo, apice spinoso, alabastris 1·5 cm. latis; floribus var. *typicæ* 3–6, var. *ochroleucæ* 3–7·5 cm. latis; capsulis 4–5 cm. longis, 2 cm. latis; seminibus 2·5 mm. latis.

Various attempts have been made to change the name of *Argemone mexicana; A. spinosa* Moench. was proposed with the idea of conserving the oldest specific epithet, that of Bauhin; *A. versicolor* Salisb. was proposed out of a mere desire to alter the current name; *A. vulgaris* Spach was proposed in the hope of preventing the confusion that had resulted from the inclusion of one or more white-flowered forms in the original species. All three must be definitely rejected.

Several attempts have also been made to subdivide the true *Argemone mexicana*. *A. sexvalvis* Stokes is an attempt to separate as a species the forms with six placentas; this is impossible, because one finds capsules with four, five, and six valves on the same plant. The separation as var. δ. by Torrey and Gray of the form in which the capsules are devoid of prickles has much to be said in its favour; if we could definitely separate *A. ochroleuca* Sweet, as a species apart, it would be very convenient to treat this smooth-capsuled plant as a variety, to be named *A. mexicana* var. *leiocarpa;* it is only from a desire to prevent confusion that it has not been separated in the text. The distribution of this form "*leiocarpa*" is peculiar; it occurs in West Africa in the Yoruba country, but, as it happens to be the form reported by Gardner as "common" in the province of Piauhuy, in Brazil, its presence in Africa may easily be explained by the intercourse which in slave-dealing times existed between Brazil and West Africa. And as the true *A. mexicana* is (in spite of the silence of books on the subject) rare in Brazil, being confined to river-banks and to the vicinity of several of the principal seaports, circumstances pointing manifestly to an exotic origin, we might have supposed that this peculiar form was the Brazilian representative of the true plant of the Antilles. But the fact that the form occurs in Key Island (which is its *locus classicus*), close to the coast of Florida, and that it there grows alongside of the typical plant, renders such an explanation unsatisfactory. The last attempt to subdivide the plant has been from the size of its flowers. This was first done by Bourgeau in his *Plantæ Canarienses exsicc.*; the true plant was issued by him as *A. mexicana*, the large-flowered form as *A. mexicana* var. *ochroleuca*. But his large-flowered form (which, by the way, is the only one reported from St. Helena) is *not* the same as *A. ochroleuca* Sweet; it has exactly the fruit of the typical plants in the herbaria of Tournefort, Linnæus, and Lamarck. The same subdivision has again been proposed by Dr. Otto Kuntze, who breaks up *A. mexicana* into two subspecies, *α. lutea* and *β. albiflora*, further separating from subsp. *lutea* a var. *parviflora*. It is not clear from this citation, though it seems probable, that O. Kuntze's "*lutea*" is a *mélange* of all the yellow-flowered forms of *Argemone;* it is, however, plain that he has misunderstood their synonymy, since an examination of Tournefort's and Linnæus's specimens shows that the true *A. mexicana* is Kuntze's *A. mexicana α. lutea* var. *parviflora*. The subdivision is, however, impossible; any one who cares to look for them may find both forms in the same patch, sometimes on the same plant, of *A. mexicana* as it grows in India.

(To be continued.)

OBITUARY NOTICES.

Of Thomas Henry Huxley, the eminent biologist (who was born at Ealing, May 4th, 1825, and died at Eastbourne, June 29th), numerous biographies have appeared. His claim to a passing mention here will be found in the interesting paper entitled "The Gentians: Notes and Queries," which (with a plate drawn by himself) will be found in *Journ. Linn. Soc.* xxiv. 101–124 (1887). In his prefatory remarks he says: "It is well-nigh forty years since I occupied myself with systematic botany."

Frederick Kitton was born at Cambridge in 1826 or 1827, and came to Norwich in 1845. He was in business as a retail tobacconist, but early took up the study of Diatoms, in connection with which his name is familiar. He published numerous papers,—twenty are enumerated in the Royal Society's *Catalogue*, and a very full list is given in De Toni's *Sylloge Algarum*,—and we have been informed that he assisted Count Castracane in the report on the *Diatomaceæ* collected on the 'Challenger' expedition, though this is not mentioned in the memoir. Kitton had a large correspondence with microscopists at home and abroad, and was an Honorary Fellow of the Royal Microscopical Society. He co-operated in the bibliography of the *Diatomaceæ* in Mr. Deby's library. In 1886 Kitton published a series of slides—50 in number—of Norfolk

Diatomaceæ. His death occurred at West Kensington on July 22nd.

Joseph Thomson, the African traveller, who died in London on Aug. 2nd, had no claim to be considered a botanist, but in 1882–3 made a "small but very interesting" collection of plants in Eastern Equatorial Africa, which are enumerated by Prof. Oliver in *Journ. Linn. Soc.* xxi. 397–406, with a prefatory note by Sir J. D. Hooker. The plants were among the first received from Kilimanjaro, Laikipia, and Lake Naivasha (which last, orthographical purists* will regret to observe, are spelt "Lykipia" and "Naivaska" or "Naivascha"), and include many interesting novelties, some, such as *Impatiens Thomsoni*, named after the discoverer. Thomson was born at Penpont, near Thornhill, Dumfriesshire, Feb. 14th, 1860. A biography, with portrait, will be found in *The Geographical Journal* for September.

Isaac Sprague, the artist who illustrated so charmingly Asa Gray's unfortunately incomplete *Genera of Plants of the Northern United States*, was born at Hingham, Massachusetts, Sept. 5th, 1811. He began life as a carriage painter, but soon took up natural history, drawing plants and birds. He attracted the notice of Audubon, and, in 1844, of Asa Gray, who employed him to make drawings for his *Text-book* and botanical charts for his lectures. In 1845 Sprague established himself in Cambridge (Mass.), and devoted his time to scientific work. He illustrated a large number of papers by Asa Gray and others, but his published figures represent but a small portion of his drawings. His death took place at his house in Wellesley Hills, Mass., on the 15th of March: Torrey's genus *Spraguea* commemorates him. Further particulars regarding Sprague will be found in *Garden and Forest* for March 27th, from which this notice is condensed.

The *Botanical Gazette* for August contains a biography by Mr. G. E. Davenport of the late Prof. Eaton, accompanied by an excellent portrait. Daniel Cady Eaton was born at Fort Gratiot, Michigan, on Sept. 12th, 1834. He came of a botanical stock; his grandfather, Amos Eaton, was one of the pioneers of American botany, and published largely on that subject between 1816 and 1840, and his father was interested in scientific pursuits. After graduating at Yale, he entered Harvard, where he began the systematic study of botany under Asa Gray. He subsequently (1864) became Professor of Botany at Yale, where he remained until his death, which happened at New Haven, Connecticut, on June 29th. His published work mainly relates to ferns, his most important book being that on *The Ferns of the United States*, in two handsome volumes (1879–80). There is also a biography, portrait, and bibliography of Eaton in the *Bulletin of the Torrey Club* for August (dated Aug. 31).

A memoir with portrait of John Howard Redfield was given in the *Bulletin of the Torrey Club* for April. Mr. Redfield was born in Connecticut, July 10th, 1815, and died at Philadelphia on Feb. 27th.

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* See *Journ. Bot.* 1895, 61.

Botany and conchology were his favourite pursuits, and he published in both these branches of science. In 1870 he became Conservator of the Botanical Section of the Philadelphia Academy of Science, and did excellent work in arranging and increasing the collections there, which include the herbaria of Schweinitz and C. W. Short. In conjunction with Mr. E. L. Rand he published in 1894 a *Flora of Mount Desert Island, Maine;* the preface of this contains the admirable remarks on recent American nomenclature which we reprinted at pp. 19–23 of this Journal for January last.

"The botanical community of Philadelphia" had previously "met with an irreparable loss" in the death of Dr. J. Bernard Brinton, of whom a biographical sketch, accompanied by a good portrait, appeared in the *Bulletin of the Torrey Club* for March. This enthusiastic appreciation is the joint production of "a committee of the Philadelphia Botanical Club," a society founded by Dr. Brinton in 1892. He was born near Waynsburg, Pennsylvania, Aug. 16th, 1835, and died at Philadelphia, Dec. 6th, 1894. Brinton seems to have had a good knowledge of plants, and was "very successful in imparting to others his own enthusiasm and love for the study of the natural sciences." He published "but little on botanical subjects," and that little is not specified by the three gentlemen who write the notice, and who maintain a reticence as to Dr. Brinton's first name which we are unable to dispel.

We would venture to suggest to writers of biographies that certain particulars of those whom they commemorate should *invariably* be given. The name *in full* is one of these; this is omitted, not only in the case of Dr. Brinton, but in that of Mr. Redfield; in the latter instance the Royal Society's *Catalogue* enabled us to supply the missing name. The place and date of birth and death are essential; but in the notice of Mr. Thomson which we have cited we are not told *where* he died, although the date of his decease is given. These omissions do not strike folk at the time as important, but any one who has had to look up biographical notices will know how difficult it is to supply such details after some time has elapsed. We are glad to know that Mr. Daydon Jackson, in the new edition of Pritzel to which he will shortly devote his energies, will follow and extend Pritzel's excellent plan of giving these dates, with references to the principal biographies of each author so far as these can be ascertained.

SHORT NOTES.

Melampyrum pratense L., var. hians.—I saw this variety in the woods near the Weir Head on the Tamar, in South Devon, growing with what may be regarded as the type plant, that is, one with a paler corolla-tube; but the distinctions are not so marked as in northern Britain, where whole tracts are occupied with the plant having rich orange-coloured corollas. In other places, especially open heaths, the flower is much paler, and the tube nearly white.

In these western counties the plant was generally of a deeper tint than in the north, but one could separate my variety without much difficulty, which also occurs in woods near Truro. In the *Flora of Plymouth* Mr. Briggs remarks that *M. pratense* varies "in tint from white to golden yellow, though usually of a pale yellow." In Kerry and Cork a plant similar to the Devon plant was noticed by me.—G. C. Druce.

Carex salina Wahl., var. — The receipt of living plants of the *Carex* I mentioned at p. 283 has proved it to be a *salina* form, but one that at present I am unable to match. From descriptions it seems to hold a middle place between *C. flavicans* Nyl. and *C. spiculosa* Fr., wanting the serrulate apex of the glumes of the latter; but the comparison of authentic specimens of the plants named by Nylander in his *Fl. Fennica* is not an easy matter, though I hope to achieve it before long. Mr. Duncan found it growing in fair abundance along a stream in a bog in Harris. It is a much smaller plant than the Caithness *C. kattegatensis* Fr., and forms an interesting addition to the Hebridean Flora.—Arthur Bennett.

Spartina Townsendi in I. of Wight.—This grass, which has not hitherto been recorded as occurring in the Isle of Wight, grows in little creeks on the west side of the River Medina, at Werrar below Newport, and also near Yarmouth. At Yarmouth *Spartina stricta* also grows abundantly, but I have not noticed it near the Werrar locality, though it grows in a creek on the opposite side of the Medina. In all the plants of *S. Townsendi* which I have examined, I noticed a curious constriction across the leaves, occurring sometimes at about a third of the distance from the base to the tip, sometimes half-way, and sometimes nearer the tip. This constriction is very evident in the growing plant, and is found on every leaf, even the very youngest, but it is less visible in the dried specimens. The plant resembles most *S. alterniflora*, but is well distinguished by the characters described by Messrs. Henry and James Groves in this Journal for 1879, p. 277, and 1882, p. 1, and in the *Exchange Club Report* for 1880, p. 37, and by Mr. Townsend in the *Flora of Hampshire*, p. 400.—Frederic Stratton.

Varieties.—*Medicago lupulina* var. *Willdenowiana* Koch. This variety appears to have escaped notice in this country, though it is probably not very uncommon. I first met with it near Reigate some years ago, but so sparingly that I did not record it. I have not looked specially for it since, but this year have met with it about both Worplesdon and Walton-on-Thames, as a garden weed on grassy banks, lawns, &c., and also in grassy places by roadsides, always mixed with the type. In the ordinary form the pod is clothed with adpressed whitish hairs, or is "glabrous"; in the variety the pod is clothed with spreading or erect yellowish gland-tipped hairs, the leaflets of the upper leaves being often ciliated with similar hairs. All the above localities are in Surrey. I do not yet feel quite satisfied that this form is native.—*Glyceria distans* var. *prostrata* Beeby. This Shetland plant maintains its characters very well in cultivation. The very sparse panicle is quite unaltered, and the branches at the lowest whorl are usually only one or two, sometimes three, very rarely four. The prostrate habit is not so pronounced as in the wild specimens from Hildasey and from Uysasound. It was gathered last year in the latter locality by Mr. F. J. Hanbury, and it is from seeds from specimens which he gave me that my plants have been grown. Of the very numerous flower-stems, the outer ones are quite prostrate, but the inner ones of the clump of plants, which are very crowded, are more or less inclined. I still feel doubtful whether it is really different from var. *pulvinata* Fries, but I followed Prof. Hackel, who thought it best to treat it as a distinct variety.—W. H. Beeby.

Sparganium neglectum in Merioneth.—This plant was met with in fair quantity at Arthog by the Rev. J. H. Bloom and myself on August 16th. Mr. Beeby has seen a specimen, and confirms the name.—Richard F. Towndrow.

Artemisia Stelleriana Besser in Cornwall. — Last July I gathered this species, which has not, I think, been recorded before for Britain, on the sands between Penzance and Marazion, in Cornwall. It grew in the sand with *Eryngium*, &c., but, as I have already pointed out, these sands have several foreign species growing on them. This species looked wild enough; indeed, when I first gathered it, I thought it was a luxuriant example of *A. maritima*. I have since carefully examined it, and compared it with the plate and description of *A. Stelleriana* in the *Refugium Botanicum*, t. 203, and find it agrees. The glands on the tube are very aromatic, and it appears to be chiefly from them that the odour is due. The 12–15 phyllaries arranged in two rows, of which the outer are much shorter and broader, appears to be a distinguishing character. —G. Claridge Druce.

Blooming Period of Argemone platyceras (p. 208). — Mr. D. Prain says of the blooming of *Argemone*, "In the Rocky Mountains, Nevada, &c., not till September and October." The above species occurs very abundantly in Northern Colorado,—on the plains and within the lower foothills,—and blooms from the *middle of July*.—Carl F. Baker.

NOTICES OF BOOKS.

The Flora of Anglesey and Carnarvonshire. By John E. Griffith, F.L.S. With a map. Bangor: Nixon and Jarvis [1895]. 8vo, pp. xx, 288.

Mr. Griffith, as the pages of this Journal have borne witness, has been for many years engaged in the investigation of the plants of Anglesey and Carnarvon, for which his residence at Bangor has afforded him every facility; and the present volume is the outcome of his researches. He has conferred a boon upon the summer visitors to the charming land of lake and mountain which surround "Yr Wyddfa, commonly called Snowdon"; and those who take their holiday in any of the resorts which dot the coast between Conway and Bangor will find this book an acceptable companion upon their excursions.

The area investigated is divided into three districts, Anglesey being one and North and South Carnarvonshire the other two. The localities given are not very numerous, but probably sufficient, and the "!" after most of them shows that the author has himself seen the plants growing in the places cited.

In Anglesey, Mr. Griffith has been preceded by the accurate Hugh Davies, whose *Welsh Botanology* appeared in 1813, and whose herbarium is in the national collection at South Kensington. For Carnarvon he had no such help; this is indeed the first attempt to present a complete flora of the county. The number of flowering plants included in the volume is 1119 species and 219 varieties, but among these, so far as we can judge, are included the numerous extinctions, casuals, and errors—at any rate no admonitory sign or difference of type distinguishes these from their more satisfactory neighbours.

Turning over the pages, we note various points of interest. At the very beginning we must enter a protest against the very large number of manufactured "Welsh" names, mostly taken from Davies, which encumber the book. Mr. Griffith hopes that these will be "of assistance in identifying those referred to in Welsh plant-lore": but this could only be the case when the names are genuine. It is certain that such plants as *Thalictrum alpinum* and *T. majus* are too rare to have any popular association, yet each of these is credited with a Welsh name. A large number of such designations are manifest translations of equally bogus "English" names, which ought long since to have dropped out of our books, as they fulfil no useful purpose.

The plant recorded from Holyhead in this Journal for 1890, p. 315, as *Helianthemum guttatum*, proved on cultivation to be *H. Breweri*: true *H. guttatum* does not grow at Holyhead. Among the *Rubi* are described a new species, *R. cambricus* Focke; a new variety, *R. mercicus* var. *chrysoxylon* Rogers; and a third, *R. Griffithianus* Rogers, described as "n. var. or n. sp."—the last apparently the plant which Mr. Rogers, in this Journal for April (p. 100), thinks "may best take rank as a strongly marked var. of *R. præruptorum*." *Rosa Wilsoni* still holds its ground at Bangor, though "very rare and only in one spot," which we think need not have been indicated so definitely, for it is suspected that the race of exterminating collectors is not yet entirely extinct. Of the distinct-looking *Solidago Virgaurea* var. *cambrica* Mr. Griffith notes that it flowers much earlier than the type, and adds "We have two other forms growing in Carnarvonshire." It is interesting to know that *Diotis* occurred in Anglesey last year, though as "the single plant found" was sent to Mr. Griffith for determination, it is to be feared that the species will not become re-established. But Mr. Griffith is wrong in supposing that the plant had not been found in Anglesey since Brewer's visit in 1727. Lightfoot, of whose "Journal of a Botanical Excursion in Wales" in 1775 we have a transcript in the Department of Botany, notes under August of that year: "Anglesea Island. *Athanasia maritima* [Linnæus's name for the plant] among the sands at Llanfaelag on the west side of the island, but only a few plants and those not yet in flower. It flowers in Sept." Mr. Griffith does not appear to know of this Journal of Lightfoot's, in which some interesting finds—*Elisma natans* at Llanberis, for example—are recorded.

Lloydia, although rare, is not likely to be exterminated from its more or less inaccessible localities: it does not seem to be confined to Cwm Idwal, as is generally believed; "the best time to find it in flower is from the 12th to 21st June." This rarity has been nearly fatal to two British botanists: "Dr. William Alexander of Halifax, like Sir Thomas Gage, was near losing his life in climbing to the dangerous summits where it grows wild."* *Potamogeton Griffithii*, which aptly commemorates its discoverer and the author of this Flora, is still confined to Llyn-an-afon: "it grows plentifully in the middle of the lake, submerged; but it is nearly impossible to get it without a boat." *Trichomanes radicans* has been seen by Mr. Griffith "growing undoubtedly wild, in one place only" in Carnarvonshire, but the locality is wisely not further indicated. The marine algæ, lichens, and mosses are enumerated, each being prefaced by a short introductory chapter.

One or two points offer themselves for criticism. The plant published by Mr. Arthur Bennett (in *Science Gossip* for 1892, p. 198) as *Ranunculus aquatilis* var. *cambricus* is here raised to specific rank as "*R. cambricus*, Ar. Bennett." No reason is given for this, nor is there any note on the plant. *Viola sylvatica* is said to be "very common and generally distributed," but the forms *Reichenbachiana* and *Riviniana* are described as "rather rare," and only one locality is given for each. The nomenclature follows that of the eighth edition of the *London Catalogue*, and we are glad to see as a consequence that *Blackstonia* replaces *Chlora:* but the authority for the former name is Hudson, not Linnæus. We have already grumbled at the spurious "Welsh" names (some of the English ones, such as the "Œderian Sedge" and the "False Wood Brome Grass," are just as bad), and we regret the want of arrangement by which the name of a species occurs at the foot of a page, while all the information about it (without any heading) comes over leaf. In cases of this kind, the name of the plant should always be repeated at the head of each page, and when a genus spreads over more than one page, the name of that should be repeated in like manner. Carelessness in matters of this kind mars many excellent books: the index of Nyman's *Conspectus* is peculiarly irritating in this way. The book as a whole is very well got up, and does credit to the local printer, who, however, should not have omitted to date his rather inelegant title-page. There are six indexes where one would serve.

Mr. Griffith has done a useful piece of work, and British botanists will thank him for it.

James Britten.

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* Salisbury in Trans. Hort. Soc. i. 328.

Fern Growing: Fifty Years' Experience in Crossing and Cultivation. By E. J. Lowe, F.R.S. With 62 illustrations. London: Nimmo. 8vo, pp. ix, 196. Price 12s. 6d.

In this handsome volume Mr. Lowe has given us an account of his numerous and long-continued experiments in the crossing of ferns. In 1867 he read a paper at the British Association Meeting in Dundee, based on his experience during the preceding ten years, but his views were not favourably received, and it was not until about twelve years ago that the accuracy of his conclusions, based on his own experiments and those of others, were generally accepted. Since 1842, as he tells us in his preface, Mr. Lowe has conducted experiments in the hybridization of various plants; and writing now, in his seventieth year, his enthusiasm is as intense as it ever was, and his experiments continue.

We must refer our readers to the book itself for an account of Mr. Lowe's investigations, many of which will be familiar to readers of the *Gardeners' Chronicle* and to frequenters of the British Association. The summary of experiments and results which he gives is both valuable and interesting, and we note with pleasure his hearty recognition of other workers in the same field, of the principal of whom he gives short biographies and portraits. An admirable etched portrait of the author is prefixed to the volume, which is copiously illustrated.

ARTICLES IN JOURNALS.

Bot. Centralblatt (No. 34). — A. Meyer, 'Ueber den Bau von *Volvox aureus* und *V. globator*.' — (Nos. 36, 37). F. Höck, 'Ueber ursprüngliche Pflanzen Norddeutschlands.'

Botanical Gazette (Aug. 15). — E. B. Uline & W. L. Bray, 'N. American *Amaranthaceæ*.'— W. Deane, 'How I mount plants.'— J. P. Lotsy, '*Euphorbiaceæ* from Guatemala' (2 pl.).—J. W. Toumey, 'Vegetal dissemination in *Opuntia*.'—T. Holm, 'Anatomical characters of N. American *Gramineæ*' (1 pl.).—G. E. Davenport, 'D. C. Eaton' (portr.). — B. L. Robinson, 'The Madison Rules.' — J. M. Coulter & J. N. Rose, *Deanea* (gen. nov., *Umbelliferæ:* 1 pl.).

Bull. de l'Herb. Boissier (Sept.). — A. Tonduz, 'Herborisations au Costa-Rica' (2 pl.). — J. Freyn, 'Orientalische Pflanzenarten.' —G. Lindau, 'Acanthaceæ Americanæ' (*Chætochlamys*, gen. nov.). —A. Jaczewski, 'Les Chætomiées de la Suisse.'

Bull. Torrey Bot. Club (Aug. 31). — W. A. Setchell, 'D. C. Eaton' (portr.). — E. P. Bicknell, 'The Genus *Sanicula* in the eastern United States.' — J. B. Ellis & B. M. Everhardt, 'New Fungi.'—J. K. Small, 'Botany of South-eastern United States' (1 pl.).

Erythea (Sept. 3).—W. C. Blasdale, '*Puccinia mirabilissima*' (1 pl.).

Gardeners' Chronicle (Aug. 31).—*Polypodium trinidadensis* Jenm., sp. n. — (Sept. 7). *Catasetum ferox* Kränzl., sp. n.; *Linospadix Micholitzii* Ridley, sp. n.—(Sept. 14). *Dendrobium sanguineum* Rolfe, sp. n.—(Sept. 21). *Stapelia longidens* N. E. Br., sp. n.

Journal de Botanique (Aug. 16, Sept. 1). — C. Sauvageau, *Ectocarpus pusillus*.—E. Rose, *Chelidonium laciniatum*. — (Aug. 16). A.

Franchet, 'Plantes nouvelles de la Chine occidentale.' — (Sept. 1). G. Poirault & M. Raciborski, 'Sur les noyaux des Urédinées.'

Journ. Linn. Soc. (xxx, No. 211: Sept. 7). — G. Brebner, 'On the origin of the filamentous thallus of *Dumontia filiformis*' (2 pl.). —Id., 'On the mucilage-canals of the *Marattiaceæ*' (1 pl.). — J. Müller, 'Thelotremeæ et Graphideæ novæ.' — Sir J. Lubbock, 'On Stipules, their forms and functions.'

Oesterr. Bot. Zeitschrift (Sept.).—E. Hackel, *Neurachne Muelleri*, sp. n. — G. Gjokic, 'Ueber die chemische Beschaffenheit der Zellhäute bei den Moosen.'—J. Rompel, 'Drei Carpelle bei *Cryptotænia canadensis.*' — W. Schmiede, 'Beiträge zur alpinen Algenflora.'—E. Halácsy, 'Zur Flora von Griechenland.' — J. Freyn, 'Plantæ Karoanæ Dahuricæ' (cont.).

BOOK-NOTES, NEWS, &c.

We have received an enumeration of French ferns by M. C. de Rey-Pailhade (*Les Fougères de France*: Paris, Dupont), which deserves attention on account of its excellent plates: these are mostly in outline, and represent a frond of each species, reduced, with enlarged and carefully executed details. A good many forms are described, some of them new; there is a list of synonyms and something like a bibliography for each species, which the entire absence of dates renders of comparatively little value; and the distribution in France is very fully given.

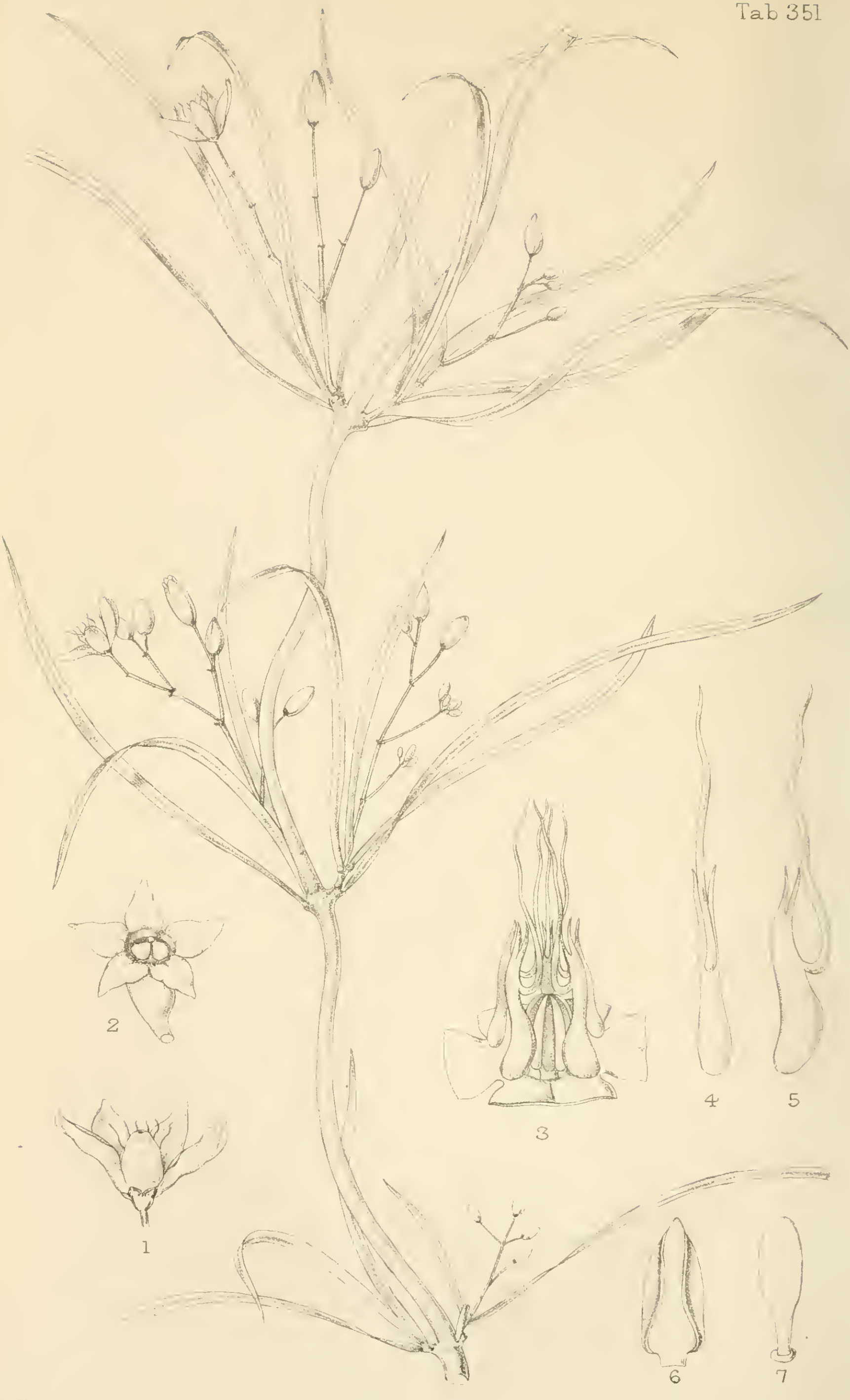
The *Bulletin of Miscellaneous Information* for August (published in September) contains an interesting historical article on the Vanillas of Commerce, by Mr. Rolfe, with descriptions of some new species, extracted from a monograph of the genus which he has prepared for the Linnean Society.

Miss Florence Woolward's beautiful monograph of *Masdevallia* is steadily approaching completion. The seventh part has just appeared, and contains an intimation that the work will be completed with the next number. The conclusion of the English translation of Kerner's *Pflanzenleben* is also announced for the end of September, and the regularity with which this has appeared leaves little doubt that it will have been completed by the time these lines are in print. We hope to notice these two important works at an early date.

We are glad to see that the long-delayed Guide to No. 2 of the Kew Museums has made its appearance. It is devoted to the Monocotyledons and Cryptogams, extends to 109 well-printed pages, and costs only 4d. We presume that we have to thank Mr. J. R. Jackson, who has for so many years been associated with the Kew Museums, for this interesting contribution to economic botany. We regret that another summer has passed without the issue of the authorized Guide to the Gardens. A hand-list of the ferns and fern allies grown at Kew was published in April last.

The book on the history of gardening in England, on which the Hon. Alicia Amherst has been so long engaged, is announced for publication in November.

Tab 351



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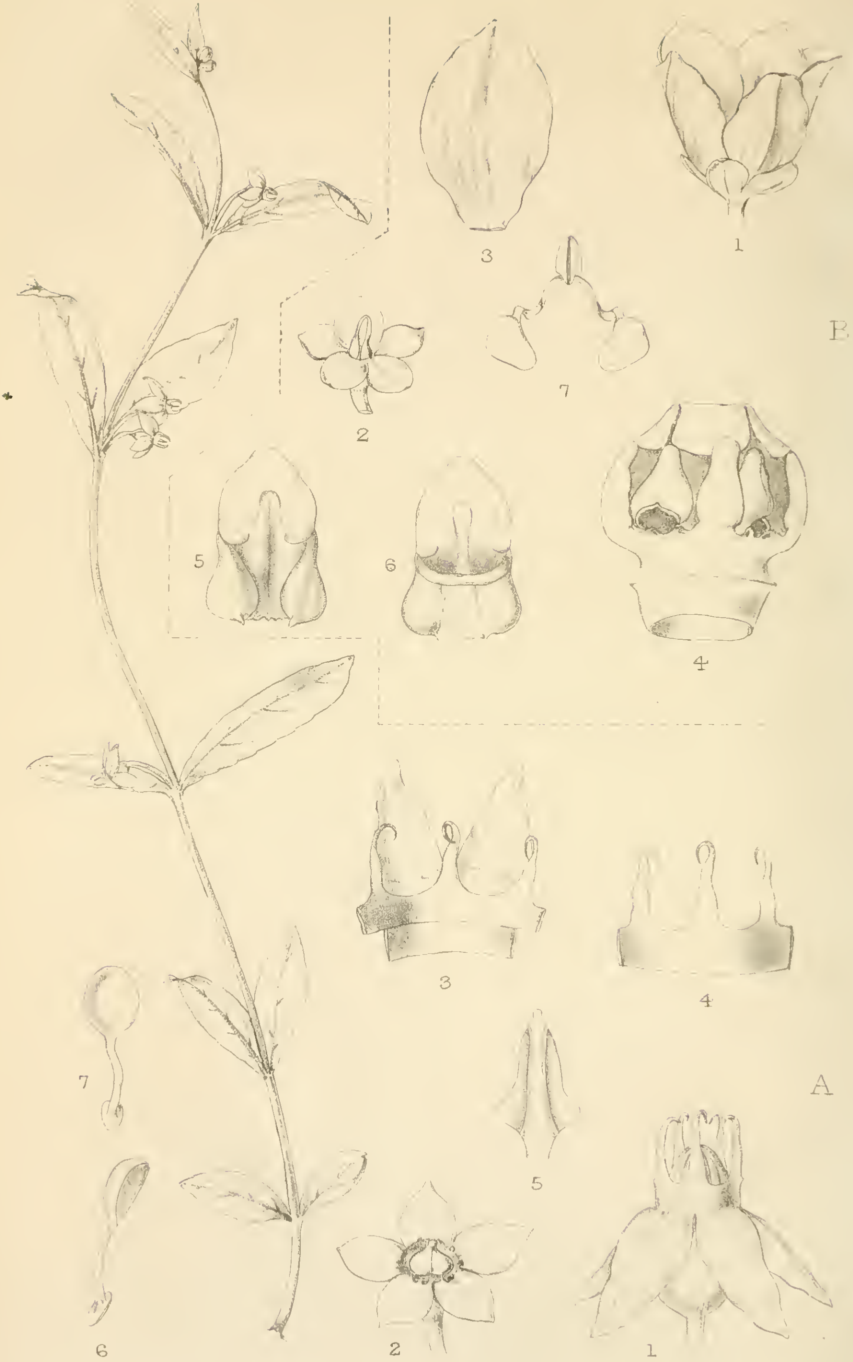
Pleurostelma africanum *Schltr.*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A. Symphytonema madagascariense *Schltr.*
B. Glossostelma angolense *Schltr.*

TWO NEW GENERA OF ASCLEPIADEÆ.

By R. Schlechter.

(Plate 352.)

SYMPHYTONEMA Schltr., gen. nov. Calyx 5-partitus, segmentis brevibus suborbicularibus obtusis, intus squamis 5 alternantibus, bene conspicuis, suborbicularibus, ornatus. Corolla alte 5-fida, lobis lanceolatis reflexo-patulis, corona foliolis corollæ adnatis, basi in annulum brevem connatis, apicibus liberis 5, cum corollæ lobis alternantibus, erectis, lanceolatis apice setaceo-elongatis, exappendiculatis. Anthera subordinis (*Periplocearum*) sagittato-rhomboidea, apice obtusa exappendiculata. Pollinia granulosa spathulata, apice rotundata. Stigma breviter conicum, basi margine incrassatum.

Symphytonema madagascariense Schltr., sp. n. Planta volubilis, ramosa, alte scandens, omnino glaberrima; ramulis teretibus remote foliatis; foliis erecto-patentibus patulisve lineari-lanceolatis vel lanceolato-ellipticis, acutis vel subacuminatis, basi angustatis, brevissime petiolatis, 2–3 cm. longis, medio fere 0·5–1 cm. latis; floribus extra-axillaribus alternantibus singulis vel in fasciculis 2–3-floris, patulis, breviter pedicellatis; calycis segmentis suborbicularibus obtusissimis, quam corolla duplo brevioribus; corolla subrotata lobis lanceolatis vel rarius ovato-lanceolatis acutis, reflexo-patulis, utrinque glabris; coronæ tubo brevi subcylindrico, apicibus liberis erectis lanceolatis vel lineari-lanceolatis, apice setaceo-elongatis, inflexis; antheris e basi breviter stipitatis rhomboideo-sagittatis, apice linearibus obtusis cohærentibus; polliniis e basi longe stipitata suborbiculari-spathulatis, obtusissimis, marginibus involutis, glandula oblonga, bene conspicua.

Habitat in Madagascariæ parte austro-orientali; scandens inter frutices prope Fort Dauphin, florens Maio, *Scott Elliot*, No. 2722!

This new genus is perhaps most nearly allied to *Camptocarpus* Dcne., but differs in the five- not ten-lobed corona, and the inflorescence. The diagnosis was written out from Mr. Scott Elliot's specimens in the British Museum, which are in good condition, although there are only a few flowers. I have not seen this plant from any other collection, not even in Mr. Baron's, a fact which may suggest a very limited geographical distribution. The colour of the flowers seems to have been a dark purple.

GLOSSOSTELMA Schltr., gen. nov. Calyx 5-partitus, intus basi irregulariter papillis inæquilongis ornatus. Corolla alte 5-fida, lobis erecto-patentibus oblongis obtusis. Corona simplex breviter annularis, apicibus liberis, 5, antheris oppositis, erectis, ligulatis, subcarnosis, antheræ dorso appressis. Anthera bilocularis, marginibus cartilagineis bene conspicuis, apice membranacea rotundata, in stigma inflexa, integra. Pollinia in quoque loculo solitaria, pendula compressa; glandula rhomboidea pro magnitudine polliniorum satis magna, caudiculis deflexis, flexuosis, elongatis. Stigma depressum, margine incrassatum 5-gibbosum.

Glossostelma angolense Schltr., sp. n. Herba erecta, glabra, 3-pedalis; caule tereti, valido, stricto, satis dense foliato; foliis patentibus subspathulato-oblongis, apice brevissime apiculatis, utrinque glabris, subtus glaucescentibus breviter petiolatis, 10–11 cm. longis, infra apicem c. 6 cm. latis, petiolo ad 2 cm. longo; floribus in umbellis extra-axillaribus alternantibus paucifloris, brevissime pedunculatis, pedicellis patentibus, quam pedunculo duplo vel plus quam duplo longioribus; floribus in ordine inter majores, fide collectoris viridi-purpurascentibus, campanulatis; calycis segmentis ovatis vel ovato-oblongis breviter acutis vel obtusis, glabris, 0·7–0·8 cm. longis, medio fere c. 0·4 cm. latis; corollæ lobis erectis, oblongis, obtusis, basi vix tertia parte in tubum brevem connatis, oblongis obtusis c. 2 cm. longis, medio fere vix 1 cm. latis, utrinque glabris; coronæ tubo brevi tubo stamineo alte adnato; apicibus liberis 5 erectis, lineari-ligulatis obtusiusculis, antheræ vix longiori dorso appressis; antheris subquadratis, marginibus cartilagineis basin versus ampliatis alæformibus, loculis æquilongis, appendice hyalino rotundato obtuso apice in stigma inflexo, marginibus loculorum rotundato-emarginatis; polliniis compressis oblique oblongis obtusis, caudiculis pendulis flexuoso-tortis, satis longis, glandula oblonga obtusa crassa, pro magnitudine polliniorum satis magna; stigmate generis.

Habitat in terra Angolensi; in silvis de Pandas prope Mangue, in districtu Pungo Andongo, alt. 2400–3800 ped., Jan. 1857, *Welwitsch*, No. 4190!

A most remarkable and distinct genus, with the habit of an *Asclepias* of the *Pachycarpus* section, but with a corona which removes it far from that genus, and brings it nearer to *Cynanchum*. Only a single plant of this was collected by Welwitsch, and he gives a note on his original ticket saying that it is very rare. The flowers are of rather large size and purplish, which would make the plant very showy. The specimen in the British Museum is rather imperfect, there being only a few leaves, with their internodes and flowers; but Welwitsch has given on his label a good description, with the aid of which I was able to draw up my diagnosis.

Plate 352.

A. *Symphytonema madagascariensis* Schlecht. Plant; nat. size. 1. Flower. 2. Ditto, after removal of corolla and stamens. 3. Portion of corolla and corona viewed from the inside. 4. Portion of corona removed from corolla. 5. Anther. 6 & 7. Two views of pollinia; cell enlarged.

B. *Glossostelma angolense* Schlecht. 1. Flower. 2. Ditto, corolla and stamens removed (1 & 2 nat. size). 3. Petal × 1½. 4. Corona and andrœcium. 5 & 6. Anther viewed from outside and inside respectively. 7. Pollinia (4–7 enlarged).

NOTES ON BRITISH MYCETOZOA.

By Arthur Lister, F.L.S.

Crateriachea mutabilis Rost. This species was found in abundance on Aug. 30th, 1895, spreading over a scattered heap of *Senecio Jacobæa*, which had been weeded out of a meadow and thrown down under the shade of tall trees at Wardour Castle, Wilts. The rooting leaves and herbage were crowded besides with other Mycetozoa, chiefly with *Physarum cinereum* Pers., *Didymium nigripes* Fr. var. *xanthopus*, and *D. difforme* Duby. The *Crateriachea* closely corresponds with the type specimen in the Strassburg collection, consisting partly of white ovoid sporangia standing erect on an ochraceous hypothallus, and partly of elongate plasmodiocarps either single or combined into an irregular net. The sporangia are sessile, or the hypothallus is produced into a stalk, which merges into the persistent base of the sporangium-wall. The capillitium consists of a rigid network of hyaline threads, with broad expansions at the angles. The lime-knots are strongly developed, and are chiefly confluent in the centre of the sporangium, forming a clavate pseudo-columella, which is either free or attached to the base of the sporangium-wall. When the fragile upper wall falls away, and the spores are dispersed, the persistent capillitium encircling the white columella bears a considerable resemblance, under a low magnifying power, to the empty sporangia of *Diachæa elegans* Fr. In many instances, however, the lime-knots are more equally scattered throughout the capillitium, and are confluent only to form a small irregular central mass.

We have represented in this fine gathering the form named *Didymium neapolitanum* by Cesati, and collected by him in the Naples Botanical Gardens; and also the very similar form gathered by Bizzozero in April, 1883, in the Botanical Gardens, Pavia, and distributed by Rabenhorst and Winter under the name of *D. squamulosum* var. *herbarum*. These two specimens are referred to in the British Museum Catalogue of Mycetozoa, p. 56, in the note to *Physarum cinereum*. Their similarity to some forms of that species, and also to the Strassburg type of *Crateriachea*, suggested that, until further gatherings were obtained establishing their stability, it was a question whether they, together with *Crateriachea*, might not prove to be merely varieties of *Physarum cinereum*. The present gathering clears up this point, showing that they are all forms of one distinct species, of which the type is *Crateriachea mutabilis* Rost. The purple-brown spinulose spores, 8 μ diam., are alike in all, and the more globose sporangia and scattered lime-knots of the Italian specimens are repeated in parts of the Wardour Castle gathering. When, however, we search for characters which would warrant the placing *Crateriachea* in a separate genus, we fail to find them. It is clearly embraced in the genus *Physarum* as at present constituted, and naturally takes its place between *P. didermoides* and *P. cinereum*. The most striking feature, *viz.*, the large development of the pseudo-columella, is not exceptional in the genus; it frequently occurs in

P. compressum, and in the robust varieties of *P. nutans;* in *P. nucleatum* Rex and *P. compactum* List. it is almost always present as a central ball; at the same time we learn from the late Dr. Rex that in *P. nucleatum* the lime-knots are not always confluent, but are sometimes distributed throughout the capillitium. I therefore place the species in the genus *Physarum*, and in the Guide to the British Mycetozoa in the British Museum it appears under the name of *Physarum Crateriachea.*

CHONDRIODERMA SIMPLEX Schroet.? I am indebted to Messrs. J. & E. Saunders, of Luton, for the history and specimens of a mycetozoon, which I have provisionally named as above from the short description given by Schroeter, under correction by those who may have seen the type. While on a tour in N. Wales, Messrs. Saunders noticed in a wild bog a growth of yellow-brown plasmodium on *Sphagnum;* they detached it, with the surrounding moss, and carefully protected it until it matured and produced about fifty sporangia. A mounted preparation and a few sporangia are in the British Museum collection. Although classed as a *Chondrioderma*, it differs from the other known species of the genus in the single, hyaline, membranous sporangium-wall, which, with the hypothallus, is beset with bright brown granules of a globular form, measuring 1–1·5 μ diam. These granules are crowded in the columella, and are often strung like beads along the delicate threads of the capillitium. It is an interesting form, taking an intermediate position between the genus *Chondrioderma* and the genus *Trichamphora*, and is worthy of being recorded, although a single gathering. Schroeter's description is as under:—

Chondrioderma simplex Schroet. *Krypt. Fl. Schles.* iii. p. 123. Sporangia globose, somewhat depressed, solitary; sporangium-wall simple, brittle, bright chocolate-brown; columella wanting; capillitium radiating, repeatedly branched, violet; spores violet, smooth, 7–9 μ diam.

Hab. On old stumps.

The following are the characters of the Welsh gathering:—

Sporangia sessile, subhemispherical, about 0·5 mm. diam., crowded, pinkish brown or dull brick-red, seated on an abundant red hypothallus; sporangium-wall (when magnified 600 times) single, membranous, hyaline, beset with somewhat scattered bright brown granules 1·2 μ diam. Columella thin; a rugose thickening of the base of the sporangium, densely charged with brown granules. Capillitium profuse, consisting of delicate, colourless, seldom violet, branching threads, sometimes beaded with brown granules. Spores violet-brown, minutely and closely warted (when magnified 1200 times), 10–12 μ diam.

Hab. On *Sphagnum.*

In comparing these two descriptions, it will be observed that the Welsh specimen differs in the crowded sporangia, in the colour of the capillitium, and in the size of the spores; while the structure of the sporangium-wall, which is the most important character, is left in uncertainty in Schroeter's account. It may be that the new gathering is a species not hitherto recorded, but, considering the somewhat unnatural circumstances under which the plasmodium was matured, it seems better to defer introducing a fresh name until further examples are obtained.

AN ACCOUNT OF THE GENUS ARGEMONE.

By D. Prain.

(Continued from p. 312.)

The differentiation of *A. mexicana* and *A. ochroleuca* is another matter. It is not always easy in dried specimens to separate them when the specimens are only in flower; when, however, we have fruits, it is impossible to mistake the two. Had the plants been European, instead of American, there is no doubt that *A. ochroleuca* would have received without question the rank of a species; it is, to take a familiar example, as different from *A. mexicana* as *Papaver dubium* is from *P. Rhœas*, and though we all know how, on occasions, every single differential character may break down in the case of these two allied "Poppies," few of us would venture to propose their formal union. Sir William Hooker has sounded a note of warning against the tendency, as strong apparently in 1831 as it is to-day, of uniting too readily the different forms of *Argemone*, and the only authors who have attempted to give a comprehensive account of the genus (Otto and Dietrich in *Allgem. Gartenzeit.* i.; 1833) have kept them apart. In deference, however, to the view of Mr. Lindley, I have here treated Sweet's "*ochroleuca*" as only a variety of *A. mexicana;* the duty of pronouncing a final verdict must be left to the botanists of America, who alone have the opportunities of making the study in the field that is necessary to decide the point.

The attempt made in the case of *A. mexicana* proper to separate a small-flowered and a large-flowered form might also be made within *A. ochroleuca*, the small-flowered form of which has been named *A. Barclayana*. The original description of *A. Barclayana* is unfortunately very inadequate, and Penny, its author, does not seem to have preserved specimens; at all events, none of his are to be found in the herbaria at Kew or the British Museum. But a plant known as *A. Barclayana* continued to be grown for some years after the date of publication of this form in English gardens; fortunately one of these is preserved at Kew, and it shows us that the plant so designated was that small-flowered form of *A. ochroleuca* which grows in Lower California, and on the opposite shores of the Gulf of California, in North-west Mexico. In this case again, were it possible to treat *A. ochroleuca* as a distinct species, we should be quite justified in treating this plant as a distinct variety, to be named *A. ochroleuca* var. *Barclayana*. As before, I have refrained from defining the variety in the text, so as to avoid the confusion that must result from the presentation of too many diagnoses.

Argemone mexicana was introduced to Europe in 1592, and was first raised by Gerard, who sent specimens to his friend C. Bauhin; this explains why Bauhin's name happened to appear before Gerard's. It is rather unfortunate that Bauhin's specific epithet was not taken up by Tournefort or by Linnæus, because the one by which it is known is somewhat of a misnomer. The plant came to Gerard from the Antilles, not from Mexico; except as a plant, almost certainly introduced, from the vicinity of one or two of the Eastern Mexican seaports, the species is unknown from Mexico in European herbaria. The same is true of the Southern United States; the only specimens in the herbaria I have consulted that profess to be wild are one from New Orleans, at Kew; one from Frederick County, Virginia, in Herb. Durand—the latter was originally in Nuttall's herbarium; and those from Key Island. Pursh says that it extends as far north as S. Carolina, but admits that it is confined to river-banks. Gardiner and Brace would even insist on its being only an introduction in the Bahamas, and there can be no question as to its being exotic in the Bermudas. The other North American specimens that I have examined are some from Ohio, collected by Lesquereux, and marked "échappe des jardins," and one from Larepe, Wisconsin, glued down with a specimen of the prairie form of *A. intermedia*, evidently both garden specimens; both of them were issued from Herb. Hale as *A. mexicana.* I have therefore refrained from quoting either gathering in the text. It is stated by Wheeler also to occur as an escape near Milwaukee; I have not seen his specimens. As regards the peninsula of Yucatan and Central America, it is not so clear that the species is introduced, though there is equally an absence of definite evidence that it is indigenous. As regards the southern shores of the Caribbean Sea, the evidence from the specimens I have examined is also doubtful, because there are at Paris specimens collected in New Granada by Triana, marked "région chaud jusqu'à l'hauteur 1000 mètres." All the others are, however, from the vicinity of seaport towns. It is moreover strange that there are no specimens from any of the Leeward Islands, and if it occurs in British Guiana or Trinidad, no English botanist has yet sent it to Kew or the British Museum, while if it occurs in Cayenne, no French botanist has yet sent it to Paris. Its rarity in Brazil has already been commented on. There is no apparent reason why the species should not occur in the centre of Mexico, seeing that it has in India spread from Ceylon to Bengal and the Panjab, and occurs everywhere from sea-level to a height of 5000 ft. in the Nilghiris and the Himalayas. But, except for specimens collected by Bourgeau in the streets of Cordoba, we have nothing but *A. ochroleuca* from Central Mexico. There is equally no reason why it should not have extended along the Pacific coasts of America, as well as along the Atlantic seaboard. The fact, however, remains that the only specimens of *A. mexicana* from the Pacific seaboard in London, Paris, or Geneva are those collected by Seemann at Panama; the presence of the species there is discounted by the extreme narrowness of the American Continent at that point, and the fact that this is the place at which the isthmus is usually crossed. The epithet *peruanus* applied by Gerard is thus even more erroneous than that applied to the species by Tournefort and Linnæus; numerous as the specimens of yellow-flowered *Argemone* from Ecuador, Peru, and Chili are, they all prove to be only *A. ochroleuca.*

When we turn to the Eastern Hemisphere, we are at once struck by the fact that the species has spread much more extensively there than in America. In this it only exemplifies a rule, for which no satisfactory explanation has yet been offered, that weeds of the New World spread more rapidly in the Old, and *vice versa.** Thus it is present in all the Atlantic islands, occurs throughout the whole African seaboard from Senegal to Socotra; appears in all the islands spoken of as Mascarene; and is widely diffused throughout South-eastern Asia.

The early figures of the species are of unequal value, but it is worth noting that all of them unmistakably indicate the true *A. mexicana* of the Antilles, except the plate in Hernandez, which, though a very poor one, represents a plant with the habit of *A. ochroleuca*, and not of *A. mexicana.* J. Bauhin's figure is good and unmistakable; Miller's is not so good; Lamarck's is excellent, and represents exactly the plant as represented in Tournefort's, Le Vaillant's, Cliffort's, Linnæus's, and his own herbaria. It is interesting to find from Lamarck's herbarium that the specimen figured did not come from America, but from the Isle de France, where it was collected by Commerson! Curtis's figure in the *Bot. Mag.* is excellent also.

It is curious to note that while the distribution of *A. mexicana* has been zonal, that of *A. ochroleuca* has been meridional. Instead of spreading eastward to Africa and Asia, like the typical plant, *A. ochroleuca* has spread southward along the countries that border the Pacific from Ecuador to Chili, spreading eastward, however, through Bolivia and Argentina to Paraguay and Uruguay. Thus at Monte Video, on the seashore the two forms have been found growing together; this is the only locality from which both have been reported; here *A. mexicana*, extending southward along the Brazilian seaboard, has come into touch with *A. ochroleuca*, spreading eastward across the Pampas. That *A. ochroleuca* is no more than an escape from gardens to the east of the Andes is pretty clearly indicated by the notes attached to the Argentine specimens of Hieronymus n. 199, and by the remark, "sponte crescit, Paraguay, et in omnibus vic. missionarum," attached by Bonpland to the specimens collected by him in Corrientes. It is not improbable that we have in this remark a clue to the manner in which it has been spread throughout South America, and that it was introduced from Mexico into Ecuador, Peru, and Chili by Spanish missionary priests.

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* The extraordinary diffusion in Tropical Asia of the American species *Tridax procumbens*, *Mimosa pudica*, *Ageratum conyzoides*, and especially *Scoparia dulcis*, may be selected from among several scores of instances as striking examples of this phenomenon; on the other hand, the diffusion, in the proportions of a plague, of certain European species, not particularly unmanageable in their native country, in the Pampas of S. America, illustrates well the same rule.

It is generally supposed that this plant was not introduced to Europe till raised by Mr. R. Barclay at Bury Hill in 1828, when it was first described by Sweet. This is, however, a mistake, for there is a specimen in the herbarium of A. L. Jussieu which shows that it was already in cultivation at Paris in the eighteenth century. Its culture did not, however, at that time spread, and it is only since 1828 that it has become generally known.

In the synonymy under *A. mexicana* I have omitted all references by Australian writers,* except those of Mr. Bailey, whose figure in *Poison. Pl. of Queensland*, as well as specimens in Herb. Calcutta collected by Scortechini, show that *A. mexicana* has at length really found its way into Queensland. It is, however, something of a reproach to Australian botanists that they have never yet sent to Kew or the British Museum any specimens of *Argemone* from Australia: the only ones from this continent, except the Calcutta ones that I have seen, are some in Herb. Paris, collected in 1845 by M. Verreaux in N. S. Wales; it is interesting to find that the plant which he found, at that date, already established in Australia is not *A. mexicana* at all, but the Chilian form of *A. ochroleuca!*

That our national herbaria should have been thus neglected need be no matter for surprise; it is always the case that plants which have become stigmatised as "common" are those of which the material when one comes to examine it is at once too voluminous and too inadequate. At Kew, the British Museum, and at Paris, there are ten times as many specimens of *Argemone mexicana* as are necessary for the morphological study of the species, but not nearly enough for the study of its distribution. Thus neither Kew nor the British Museum has a specimen from Australia, Ceylon, or the Cape of Good Hope; as regards Ceylon, the only examples I have seen are at Paris, and were collected by Sonnerat!; as regards the Cape, there are only two in Paris, one in the National Herbarium, again collected by Sonnerat! and one in Herb. Cosson, collected by Prof. MacOwan. On the other hand, the French botanists have never sent to Paris a specimen from Cochin-China; its presence there depends therefore entirely on Loureiro's assertion; and, although it is clear from a remark made by Sir William Hooker that he has seen a Philippine specimen, there is no specimen from that locality either in London or in Paris now, and our knowledge of its existence there, except for Sir William's reference, depends entirely on its citation by Blanco. It would be well if collectors always kept in mind the fact that "the field" is not the place wherein to decide that a species is, or is not, common; it is their duty to collect and to communicate examples of *everything* they see; the responsibility of deciding whether particular specimens are or are not required must be left to those who alone are in a position to exercise it—the various directors or owners of great national and private herbaria.

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* It is said by K. Muller to be present as an escape in S. Australia, and by Woods to be an escape near Sydney; it is not given in Baron von Mueller's *Census* of Victoria plants.

3. ARGEMONE ALBA Lestib. Glabra glaucescens, ramis ascendentibus gracilibus undique densius foliosis cauleque inermibus vel aculeis patentibus armatis, foliis herbaceis margine sinuatis cnicoideo-spinosis, venis albidis; floribus supra bracteas 1–3 secus ramos plus minus elongatos dispositas singulis vel rarius 2 terminalibus; sepalis sub apicem in cornu brevissimum conicum herbaceum productis extus glabris vel aculeis parvis perpaucis obsitis; petalis albis oblongis basi angustatis apice truncatis; capsulis fusiformibus 4-valvis, stylo distincto, valvis tenuioribus reticulatis aculeis subæqualibus basi vix dilatatis obsitis; seminibus globosis distincte reticulatis.

Var. *typica;* foliis floribusque minoribus aculeis ascendenti-patentibus. *Argemone alba* [Jussieu MSS.] Lestib. *Bot. Belg.* ed. 2, iii. pt. 2, 132 (1799). *A. albiflora* Hornem. *Hort. Hafn.* 489 (1815); Sims, *Bot. Mag.* t. 2342 (1822); Otto & Dietr. *Allgem. Gartenzeit.* i. 300 (1833). *A. Georgiana* Croom, *Am. Journ. Sc.* Ser. 1, xxv. 75 (1834). *Argemone* sp. nov., Nuttall, *Gen.* ii. 9 (1818); Elliott, *Bot. Car. Georg.* ii. 13 (1820). *A. mexicana* var. *albiflora* DC. *Syst. Veg.* ii. 86, syn. *A. alba* Raf. et syn. Haller et Zinn. exclus. (1821); *Prodr.* i. 120 (1824); Lindl. *Bot. Reg.* sub t. 1343 (1830). *A. mexicana* var. α. Lamk. *Encyc. Meth.* i. 247 (1783); *Syn. Pl. Mus. Fl.* (1806); De Freyl. *Cat. Jard. Butt.* (1810); *Cat. Pl. Hort. Patav.* (1812); Vig. *Hist. Nat. Pav.* 50 (1814); Walp. *Rep.* i. 109 (1842). *A. mexicana* var.; Pursh, *Flor. N. Amer.* 368 (1814). *A. mexicana* var. γ. Torr. & Gray, *Flor. N. Amer.* i. 61 (1838). *A. mexicana* Hook. *Journ. Bot.* i. 190, quoad spp. apud Covington lecta (1834); Chapm. *Fl. S. Unit. St.* 21, quoad plantam albifloram [*A. mexicana* var. *alba* Chapm. MSS. in Herb. Durand!] (1860) haudquaquam Linn. *A. vulgaris* var. *albiflora* Spach, *Hist.* vii. 86 (1839).

America: Florida, *Nuttall*! *Chapman*! Georgia, *Herb. Paris*! S. Carolina, "*M. A. C.*" *in Herb. Drake*! Louisiana vel Alabama, apud Covington, *Drummond*! Texas, apud San Felipe, *Drummond*!

Var. *glauca:* foliis floribusque magnis, aculeis reflexis. *Argemone rosea* Hook. *Bot. Misc.* ii. 207, quoad spp. Sandvicensia (1830). *A. mexicana* var., Sincl. *Fl. Hawaii*, t. 17 (1885). *A. mexicana* Seem. *Bot. Her.* 23, in parte (1852); Hillebr. *Flor. Hawaii*, 7 (1888), haudquaquam Linn. [*A. glauca* Nuttall MSS. in Herb. Brit. Museum. *A. lactucæfolia* Planch. MSS. in Herb. Kew.]

Polynesia: Ins. Sandvicenses; Oahu, *Nuttall*! *Menzies et Nelson*! *G. Barclay*! *Remy*! *Dna. Sinclair*! Maui, *Macrae*! *Ballieu*!

Herbacea gracilis 30–90 cm. altis ramis floriferis gracilibus 4–10 cm. longis; foliis in var. *typica* 4–8 cm. longis, 1·5–2·5 cm. latis; in var. *glauca* 10–25 cm. longis, 6–12 cm. latis; sepalis 2–2·5 cm. longis, cornubus 3 mm. longis, alabastris 1·5 cm. latis; floribus 6–8 cm. latis; capsulis 2·5–3·5 cm. longis, 2 cm. latis, stylo 4–6 mm. longo; seminibus 2·5 mm. latis.

The plant here described as typical *A. alba* was first differentiated by Lamarck, who described it as a variety of *A. mexicana*. It differs, however, so greatly in the shape as well as in the colour of the petals, in the shape and size of the horns of the sepals, and in

the fruit, that there is no doubt that Lestiboudois and Hornemann were amply justified in giving it specific rank. The difficulty does not lie in distinguishing it from *A. mexicana*, but, as will presently appear, from the other white-flowered Argemones. Its nearest ally is the white-flowered *Argemone* of the Sandwich Islands which Sir William Hooker associated with the white-flowered *Argemone* of Chili, but which, owing to its agreement with the plant characteristic of the South-eastern United States in the disposition of its bracts, the shape and size of its sepals, the shape of its petals, and the armature of its capsule—all these being points wherein it differs from the Chilian form—I have ventured, in spite of its larger size, to treat here as a variety of *A. alba*. The species is also very nearly related to *A. grandiflora*, which, however, differs in having pedicels in the axils of all its floral bracts, so that its cymes become subpaniculate; in having long sepal-horns, and in having an almost smooth fruit with thick coriaceous valves. *A. grandiflora* is therefore, at least for the present, probably better left as a species.

The name *A. alba*, though, as Lestiboudois published it, merely a name, cannot be allowed to lapse, because at the time that Lestiboudois wrote this was the only white-flowered *Argemone* known in Europe—the next two to appear being *A. platyceras*, raised in Berlin, and *A. grandiflora*, raised in London, both in the same year (1827); the presumption therefore is altogether in favour of this being the plant intended. This presumption has been, however, as nearly as possible converted into a certainty by the discovery in Mr. Drake del Castillo's herbarium of a specimen of the plant that in Lamarck's herbarium forms the type of *A. mexicana* var. α.; cultivated, like Lamarck's type, in the Royal Gardens at Paris, but which had found its way from the herbarium of A. L. de Jussieu into the Herb. Richard. This Jussieuan specimen is marked *A. alba* Juss.; Jussieu seems therefore to have been the botanist who first gave specific rank to the form, and it is highly probable that it is only Jussieu's name, not an original one, that Lestiboudois cites. As, however, Jussieu does not seem to have published the name, Lestiboudois must be quoted as the authority for it. It is strange that there is no duplicate of the specimen in Jussieu's own herbarium in Herb. Paris, particularly when we find, what was not to be expected, that it contains a specimen of *A. ochroleuca*, cultivated at that early date, in the Paris gardens.

The synonym *A. alba* Raf. cited by DeCandolle must be excluded from this form, for although Rafinesque described it in his *Flora Ludoviciana*, he states that his plant is a native of Mexico, only cultivated in gardens in Louisiana, and, as *A. alba typica* does not occur in Mexico, Rafinesque's plant is not the same as Lestiboudois's. So must the synonym *Argemone flore albo, sæpe 3-petalo* Haller, *Pl. Goett.* 89 (1753); Zinn. *Pl. Goett.* 116 (1757). Haller's description suggests a *Papaver*, and Zinn actually supposes that it may have been *Argemone armenaiaca*, which is a *Papaver*. The colour of the flowers is against its having been this particular species, but it is not improbable that it may have been a white-flowered form of

Papaver alpinum, one particular form of which was named by Linnæus *Argemone pyrenaica*. What the plant was, however, is of little consequence in this enquiry, and as Zinn, working only four years later in Haller's own garden, was unaware what the plant was, we can hardly hope ever to ascertain. We know enough, however, to justify us in refusing to accept the citation here.

The presence of a variety of this species in Polynesia, if var. *glauca* be really, as I think, best referred here, is difficult to explain. It is hardly likely that the form is truly indigenous in the Sandwich Islands, and yet it is difficult to see why the plant characteristic of the South-eastern United States should be that which has become established in this particular archipelago. One would rather have expected to find that the species present was characteristic of the Pacific coasts of America; indeed, Sir William Hooker has identified it with the white-flowered *Argemone* of Chili. If this be really the case, and it must be admitted that in habit and general appearance it much resembles the Chilian plant—hardly more, however, than it does the plant characteristic of the North American prairies—it is remarkable that it should have assumed a form which, while remaining true to itself in all the specimens I have seen, should have diverged from the other Western American forms in the disposition of its bracts and in the shape of its sepals, and should in these respects have assumed the features which characterise the *A. alba* of the Eastern States, It is to be feared that we see in this combination of characters an indication of the necessity for refusing separate specific rank to any of the white-flowered Argemones, and of recognising in the genus only three species—*A. fruticosa*, *A. mexicana*, and a very variable *A. alba*.

The Sândwich Island variety does not appear to have ever been introduced into European gardens. The date of introduction of the true *A. alba* is somewhat uncertain. Hornemann states that it was introduced to Denmark in 1812, and it has been supposed by some that it was not known till then in Europe, and that consequently Lestiboudois's name could not apply here. This is of course an unjustifiable deduction, since we know that the plant was in Europe in the time of Jussieu and Lamarck, and was cultivated in many French and Italian gardens prior to its description by Hornemann. It has also been generally supposed that it came from Mexico ; Hornemann, however, is careful to indicate that its origin was to him unknown. We know now that its Mexican origin is as mythical as that of *A. mexicana* itself, and that it must have been introduced from South-eastern America, where alone it occurs in a wild state. The exact date I have not, however, been able to trace.

Before leaving *A. alba*, it is necessary to allude to another point. In the accounts of the genus *Argemone* it has been usual to speak of the perianth as variable. This statement requires some qualification. In the very large number of specimens examined by me in the various herbaria mentioned in the introduction I have only seen three specimens with a 4-merous perianth. These have been the specimens marked *A. alba* Juss. in Mr. Drake's herbarium, the specimen at Kew which is the type of the *Bot. Mag.* figure of

A. albiflora, and a wild specimen from Florida named by Chapman himself in Herb. Durand *A. mexicana, alba*. In not a single specimen of any of the other forms of *Argemone*, whether white-flowered or yellow-flowered, has the phenomenon been met with; all the flowering examples have three sepals and six petals. It is noteworthy, too, that in his description of *A. Georgiana*, Mr. Croom states that this form is often 8-petalled in Georgia. We have thus a very odd corroboration of the identity of the garden *A. alba* with the plant of the South-eastern States; whether we have in the character an additional plea for the treatment of *A. alba* as a good species I must leave to others to decide, though I am myself inclined to believe that we have. In any case it is necessary to emphasise the fact that, so far as my research goes, this tendency to tetramery is confined entirely to this form, and is met with in wild as well as in cultivated examples. The statement that the flower in *Argemone* may be 4-merous is thus, if used as a generic character, exceedingly misleading, and has therefore been deliberately omitted from the text of the generic description.

There is some dubiety as to the locality of one of the specimens quoted; this dubiety is explained by Sir W. Hooker (*Journ. Bot.* i. 183). Mr. Drummond journeyed through Alabama to Louisiana, collecting as he went; there is a locality Covington in both States, but it is not clear from Mr. Drummond's notes which of the two is meant. When the plants were received, Sir William thought it was Covington, Alabama; when they were published, he was inclined to think that the Louisiana Covington was intended.

4. ARGEMONE GRANDIFLORA Sweet. Glabra glaucescens, ramis ascendentibus gracilibus undique sparse foliosis cauleque inermibus, foliis herbaceis sinuato-pinnatifidis margine lactucoideo-acutilobis vix spinosis, venis albidis; floribus supra bracteas 1–2 foliaceas versus apicem ramorum plus minus elongatorum dispositas in cymis 3–6-floris subpaniculatim terminalibus; sepalis 3 sub apicem in cornu teretiforme omnino herbaceum læve productis, extus glabris; petalis 6 magnis albis basi late cuneatis apice truncatis; capsulis angustius fusiformibus 4-valvis, stylo distincto, valvis crasse coriaceis inermibus vel aculeis perpaucis medianis tantum obsitis; seminibus globosis distincte reticulatis. *Argemone grandiflora* Sweet, *Brit. Fl. Gard.* iii. t. 226 (1827); Lindl. *Bot. Reg.* t. 1264 (1829); Loddig. *Bot. Cab.* xvi. t. 1546 (1829); Hook. *Bot. Mag.* t. 3073 (1831); Otto & Dietr. *Allgem. Gartenzeit.* i. 300 (1833); Walp. *Rep.* i. 110 (1842); Hemsl. *Biol. Centr. Amer. Bot.* i. 26 (1879).

America: Mexico; Oaxaca, ad Mextitlan, *Ghiesbrecht in Herb. Paris*! *Europe:* in hortis botanicis privatisque sæpissime culta (v. sp. in *Hort. Barcl.*! *Hort. Paris*! *Hort. Kew*! *Hort. Gener.*! *Hort. Calcutta*! &c. culta).

Herbacea robustior annua biennis vel, ut videtur, nonnunquam perennis, 30–90 cm. alt., ramis floriferis 3–6-floris gracilibus 6–12 cm. longis; foliis radicalibus nonnunquam 25 cm. longis, 8 cm. latis, caulinis 8–15 cm. longis, 2–5 cm. latis; sepalis 2 cm. longis, cornubus 8 mm. longis, alabastris 1 cm. latis; floribus 10–12 cm.

latis; capsula 2–2·5 cm. longa, 1·5 cm. lata; stylo 3-4 mm. longo; seminibus 2·5 mm. latis.

This species has been known in European gardens since 1827, when it was first raised in the garden of Mr. R. Barclay, and was described and figured by Sweet. In certain herbaria, notably in Herb. Kew, where the types of Sweet's, Lindley's, and Hooker's figures are all preserved, also in Herb. Paris and in Herb. DeCandolle, the species is well represented; in others, notably the important Herb. Brit. Museum, there are no examples. It is, however, only the Paris Herbarium that is fortunate enough to possess wild specimens that correspond exactly with the garden-plant so familiar in Europe. These show that it is native in South-western Mexico. Whether the fact that only one gathering of this has as yet reached Europe indicates that the form is rare, or that the province of Oaxaca has been but imperfectly explored, must be left to American botanists to decide.

This plant is very nearly related to *A. alba typica;* the differences between them have been already commented upon. It is the least prickly of all the known forms of *Argemone;* even the tips of the lobes of the leaves are often only weakly mucronulate, and it is unusual to find more than a few spines on the stem and branches. Whether it deserves specific rank will depend on the result of future research; the bibliography of this form and of *A. alba* var. *typica* exemplify, however, in a striking fashion the extent to which custom and the tendency to copy from our predecessors often outweigh in systematic botany the value of actual characters. In spite of the close alliance of these two forms, no one has ever formally united them. The relationship of both to the *Argemone mexicana* group of forms is much the same; indeed, *A. grandiflora* bears a far greater resemblance to *A. ochroleuca* than any specimen of *A. alba* that I have seen bears to true *A. mexicana*. Yet since 1834 not a single author has been found to admit the undeniable right of *A. alba* to specific rank, while during that period not one has refused to accede this rank to *A. grandiflora*.

(To be continued.)

ASCLEPIADACEÆ ELLIOTIANÆ.

By R. Schlechter.

(Plate 351.)

(Concluded from p. 307.)

Stathmostelma K. Sch.

Stathmostelma gigantiflorum K. Schum. in *Engl. Jahrb.* xvii. (1894), 129, t. 6.
Mts. Makindu, Nov. 26, No. 6283.

Stathmostelma pauciflorum K. Sch. *l. c.* (1894), 132. *S. reflexum* Britt. et Rendle in *Trans. Linn. Soc.* ser. 2, iv. (1894), 27, t. 6, f. 4–6, Shire Highlands, Dec., No. 8567.

STATHMOSTELMA PEDUNCULATUM K. Sch. *l. c.* (1894), 132.

Uplands, Athi Plains, 5000–6000 ft., Dec., No. 6499. Dry sandy soil, old lake, Buganga Buddu, Febr., No. 7463.

Besides these three species mentioned above, there are two more numbers (No. 8155 and No. 8509) which undoubtedly belong to this genus, but, owing to incomplete material, cannot be identified.

ASCLEPIAS L.

After having had a good opportunity of seeing that the characters on which the genus *Gomphocarpus* was separated by R. Brown from *Asclepias* cannot be any longer maintained as sufficient to keep the two genera distinct, I feel compelled to follow the steps of Baillon in uniting *Gomphocarpus* with *Asclepias*.

Of the new *Asclepias denticulata*, which I have described below, I have seen specimens which have the characteristic appendage of *Asclepias* on the inner side of the corona-scales, as well as others which, on account of the want of any appendage, would have to go to *Gomphocarpus*. Between these two extreme forms there was to be found every intermediate stage in the size of the corona-appendage.

I must confess that I have tried to avoid the union of two such well-known and large genera, but I fail to see the slightest reason for keeping them any longer separate. I therefore propose, although against my own inclination, to unite them now, for a union is unavoidable, and had better be executed before the species of *Gomphocarpus* become more numerous than they are already. The same view has been already expressed to me several times by Mr. N. E. Brown.

Asclepias denticulata Schltr., n. sp. Herba valida erecta, virgata, subsimplex? vel ramosa; caule stricto bifariam puberulo vel tomentoso, basin versus glabrato, dense foliato; foliis erecto-patentibus patentibusve lineari-lanceolatis acutis, glabris, marginibus sæpius revolutis, basi in petiolum brevissimum angustatis, 8–14 cm. longis, medio fere 1–2 cm. latis; umbellis extra-axillaribus alternantibus erecto-patentibus, ad 10-floris, pedunculo tereti villoso, pedicellis filiformibus erecto-patentibus vel apice subnutantibus, villosis, pedunculo paulo brevioribus, foliorum longitudinis dimidium vix excedentibus; floribus subrotatis niveis, c. 1·5 cm. diametientibus; calycis segmentis ovato-lanceolatis acutis, pilosis, quam corolla duplo brevioribus; corollæ lobis ovato-oblongis obtusis utrinque glabris, 0·7 cm. longis, medio 0·4 cm. latis, patenti-patulis; coronæ foliolis erectis, quam gynostegio subduplo brevioribus, e basi breviter unguiculata conduplicata cucullatis, apice truncatis, eroso-denticulatis, margine anteriore lobulo erecto apice denticulato coronam vix excedente utrinque donatis, intus ligula vel lamella carnosula brevi ornatis vel rarius nudis; antheris oblongis marginibus cartilagineis angustis basi acutis, appendice hyalino rotundato brevi, apice inflexo, marginibus loculorum ad medium usque excisis; polliniis valde compressis oblique anguste oblongis, caudiculis divaricatis brevibus subfiliformibus, glandula minuta subrhomboidea.

Kampala, Jan., No. 7310; Ruwenzori, west side valleys, Semliki, July, No. 8101; wet places, Berkeley Bay, Nyanza, Jan., No. 7089; Wimi, Ruwenzori, 6000–9000 ft., June, No. 7904.

The peculiarity of this species I have already mentioned. It is a plant allied to *A. glaberrima* (Oliv.) Schlecht. and *A. fruticosa* L., but very distinct on account of the corona-scales. From all the above-mentioned localities Mr. Scott Elliot brought only the upper parts of the stem, and therefore I could not ascertain its dimensions. Some of the examples in the collection measure over 40 cm.

Asclepias eximia Schltr., n. sp. Herba erecta, valida, 50–70 cm. alta; caule subsimplici vel parum ramoso, bifariam villoso cæterum piloso, remote foliato, foliis erecto-patentibus ovato-lanceolatis acutis, basi subcordatis, brevissime petiolatis, utrinque scabridis, sparsim pilosis, subtus costa margineque subvillosis, 5–7 cm. longis, infra medium 3–5 cm. latis; umbellis erecto-patentibus, extra-axillaribus alternantibus, 5–10-floris; pedunculo pedicellisque teretibus villosis, folia plus minus excedentibus; floribus illis *A. lineolatæ* subæquimagnis, niveis, corona atropurpurea; calycis segmentis lanceolatis acutis pilosis, quam corolla subduplo brevioribus, 0·7–0·8 cm. latis; corolla subrotata, 2·5 cm. diametro, lobis ovato-oblongis obtusis utrinque glabris, 1·5 cm. longis, medio fere 0·7 cm. latis; coronæ foliolis erecto-patentibus carnosiusculis, circuito lanceolato-oblongis obtusis, medio subconstrictis, margine basi utrinque lobulo erecto lineari apice alte connato, 0·5 cm. longo donatis, 1 cm. longis, gynostegium duplo excedentibus; antheris oblongis, marginibus cartilagineis basin versus subdilatatis, appendice hyalino rotundato obtusissimo, apice in stigma inflexo, marginibus loculorum breviter excisis; polliniis oblongis, caudiculis brevibus divaricatis, dimidio inferiore subdilatatis, glandula oblonga obtusa, quam polliniis paulo minore.

Ruwenzori, 2000–3000 ft., Apr., No. 7627.

This plant, I believe, would best be placed near to *A. Grantii* (Oliv.) Schltr. Although its fruits are not yet known, from the general structure of the corona-scales it seems likely to be one of the species from the section *Pachycarpus*. The corona-scales are a good deal like those of *A. Grantii*, but the ligula on the inner side, which is formed by the two lateral incurved and deeply connate lobes, is of a different shape. The plant must be very handsome in the living state, and would be worth while introducing to European greenhouses.

ASCLEPIAS FRUTICOSA L., var. ANGUSTISSIMA (Engl.).

Dry sunny places, Ruwenzori, 6000–7000 ft., May, No. 7667; dry rocks by a river, Man, 6000–8000 ft., Dec., No. 6794.

It is very possible that this must be regarded as a species, distinct from *A. fruticosa* L. But this question must be settled when we have more material of the plant to show whether the characters of the corona are constant.

Asclepias leucocarpa Schltr., n. sp. Suffrutex virgatus, plus minus racemoso; ramis virgatis, tomentosis, demum glabrescentibus, satis dense foliatis; foliis angustissime linearibus acutis, suberectis, glabris, marginibus revolutis, basi in petiolum brevissimum albo-

tomentosum demum glabrum attenuatis, 5–8 cm. longis; umbellis extra-axillaribus alternantibus, 4–8-floris; pedunculo pedicellisque, paulo brevioribus, gracilibus subglabris; calycis segmentis lanceolatis acutis tenuissime pilosis, quam corolla duplo brevioribus; corollæ lobis oblongis obtusis utrinque glabris, 0·6 cm. longis, medio 0·3 cm. latis; coronæ foliolis e basi breviter unguiculata cucullato-conduplicatis, apice truncatis, obtusis, margine anteriore obscure sub-bilobulatis, in dentem brevem acutum productis, gynostegio æquilongis, intus nudis; antheris oblongis, marginibus cartilagineis basi ampliatis subfalcatis, appendice hyalino rotundato obtusato, apice in stigma inflexo, marginibus loculorum ad medium usque excisis; polliniis compressis oblique lanceolato-oblongis, caudiculis e basi filiformibus, dimidio inferiore divaricatis, dimidio superiore pendulis, subdilatatis, glandula parvula ovoidea obtusiuscula, caudiculis infra medium insertis; folliculis anguste fusiformibus longissime rostratis niveo-lanatis, sparsim piloso-spinosis.

Waterside, Man, 6000–8000 ft., Dec., No. 6882.

The nearest ally to the present species is *A. Burchellii* Schltr. (*Gomphocarpus tomentosus* Burch.), from South Africa, with larger flowers, and a very different fruit. The corona in our plant is also distinct from that of *A. Burchellii*, although somewhat similar.

Asclepias lineolata Schltr. *Gomphocarpus lineolatus* Dcne. in *Ann. Sc. Nat.* ser. 2, ix. (1838), 326.

Ruwenzori, Wimi, 6000 ft., June, in fruit, No. 7881: Buddu, Febr., March, No. 7583; Shire Highlands, Milanje, Dec., No. 8668.

Seems to be very widely distributed all through Tropical Africa, ranging from Angola to Abyssinia.

Asclepias palustris Schltr. *Gomphocarpus palustris* K. Schum. in *Engl. Jahrb.* xvii. (1893), 127.

Shire Highlands, Milanje, Dec., No. 8670.

Asclepias Petherickiana Schltr. *Schizoglossum Petherickianum* Oliv. in *Trans. Linn. Soc.* xxix. (1875), 109, t. 118.

Samia, Kairrondo, 4000 ft., Jan., No. 7130: dry plateaux, Buddu, Febr., No. 7447.

Asclepias rubicunda Schltr., n. sp. Herba erecta, simplex, plus minus fulvo-tomentosa, demum glabrata; caule tereti, satis dense foliato; foliis erecto-patentibus ovato- vel lanceolato-oblongis, acutis, basi subcordatis puberulis, subtus costa margineque scabridis, 4–7 cm. longis, medio 1·2–3 cm. latis, subsessilibus; umbellis extra-axillaribus alternantibus, 4–7-floris, folia excedentibus; pedunculo erecto, pedicellisque brevibus erecto-patentibus vel patentibus, fulvo-tomentosis, demum glabrescentibus, gracilibus teretibus; corolla subrotata extus viridi-violascente, intus fulva; calycis segmentis lanceolatis acutis vel acuminatis, pilosis, quam corolla duplo brevioribus; corollæ lobis erecto-patentibus ovato-oblongis obtusis, 0·8 cm. longis, medio 0·4 cm. latis, extus glabris, intus tenuissime puberulis, coronæ foliolis e basi breviter unguiculata compresso-cucullatis apice oblique truncatis obtusis, margine anteriore apice utrinque in dentem adscendentem apice acuta in stigma inflexum productis, marginibus apice lateribus extrorsum reflexis;

antheris anguste oblongis, marginibus cartilagineis subfalcatis angustis, loculos vix excedentibus, appendice hyalino rotundato apice in stigma incurvo, marginibus loculorum ad medium usque excisis; polliniis oblique rhomboideo-lanceolatis obtusis valde compressis, caudiculis brevibus divaricatis, glandulæ minutæ anguste ovoideæ basi dilatata dimidio inferiore affixis.

East side of Albert Edward Nyanza, on dry grassy hills, Aug., No. 8088; dry plateaux, Buddu, Febr., No. 7443.

An ally of the South African *A. Dregeana* Schltr. (*Gomphocarpus marginatus* E. Mey.), from which the corona at once distinguishes it. The very remarkable dark ochre-red indumentum occurs in the genus only in these two allied species, but is also found in some few other genera, amongst which *Dregea* E. Mey. may be mentioned as the best known.

WOODIA Schltr.

Woodia trilobata Schltr., n. sp. Herba simplex, erecta, valida; caule stricto, subtereti, satis dense foliato; foliis patentibus vel erecto-patentibus ovato-lanceolatis, acutis, margine plus minus undulatis, utrinque scabris subtus costa villosis, basi subcordatis, breviter petiolatis, 7–12 cm. longis, supra basin 2·5–5 cm. latis; umbellis erecto-patentibus extra-axillaribus alternantibus, plurifloris, quam folia brevioribus; pedunculo tereti erecto villoso, pedicellis filiformibus pilosis, quam pedunculus brevioribus; calycis segmentis lanceolatis acutis villosis, corollam paulo superantibus, 0·8 cm. longis, erecto-patentibus; corolla subcampanulata, lobis oblongis obtusis intus glabris, extus dimidio superiore sparsim pilosis; coronæ foliolis carnosis, quam gynostegium plus quam duplo brevioribus trilobulatis, lobulis suborbicularibus obtusis, subæquimagnis, intermedio erecto, lateralibus divaricatis; antheris oblongis, marginibus cartilagineis semirhombeis, loculis subæquilongis, appendice hyalino ovato-lanceolato, apice breviter exciso, marginibus loculorum usque ad medium excisis; polliniis compressis oblongis, more generis verruculosis, caudiculis basi valde dilatata glandulam oblongo-ovoideam amplectentibus.

Wet places, Nandi (Nile), 7000–8000 ft., Dec., No. 6877.

The third species of the genus. It differs from both the others by the habit and the corona-scales; in the latter the three parts are rounded, whereas in *Woodia trifurcata* Schltr. and *W. verruculosa* Schltr. they are acute or subacute, and lanceolate. As in both South African species, the calyx is here also longer than the corolla, the pollinia are verruculose, and the glandula is embraced by the subhyaline widened base of the caudiculæ. The plant has more the habit of some species of *Asclepias* of the section *Xysmalobium*, as, for instance, *A. Stockenstromensis* (Scott Elliot) Schltr., but the floral characters are those of *Woodia*.

CYNANCHUM L. f.

CYNANCHUM ALTISCANDENS K. Sch. in *Engl. Fl. Ost-Afr.* (1895), 324. Dry hills, Karagwe, 4000–5000 ft., Aug., No. 8168; Usoga, common climber, Jan., No. 7227.

CYNANCHUM MOSSAMBICENSE K. Sch.? in *Engl. Flor. Ost-Afr.* (1895), 324.

Kampala, shady places, Jan., No. 7294.

This determination is a little doubtful, as I have not seen Schumann's type, but the description agrees well enough, as far as it goes.

SARCOSTEMMA R. Br.

There are two numbers evidently belonging to this section, but both without any flowers, and therefore undeterminable. (No. 7267 from Usoga, and No. 7341 from Kampala, Uganda.)

MARSDENIA R. Br.

Marsdenia zambesiaca Schltr., n. sp. Frutex volubilis, alte scandens; ramis teretibus glabris, plus minus verruculosis remote foliatis; foliis graciliter petiolatis, ovatis vel ovato-lanceolatis, acutis, 4–9 cm. longis, 2–5 cm. latis, utrinque glabris, petiolo 2-3 cm. longo; cymis extra-axillaribus alternantibus 6-pluri-floris, subumbellatis, petiolo æquilongis vel paulo longioribus; pedunculo brevi plus minus rubicundo-tomentoso, pedicellis patentibus vel erecto-patentibus filiformibus, glabris, pedunculo subæquilongis vel sublongioribus; calycis segmentis ovato-lanceolatis, vel lanceolato-oblongis, breviter acutis, 0·5–0·6 cm. longis, medio 0·2–0·3 cm. latis, extus tenuissime puberulis, margine subinconspicue ciliatis; corolla subrotata, c. 1·5 cm. diametro, lobis patentibus basi tertia parte in tubum brevem late campanulatum connatis, oblongis, obtusis, apice sæpius plus minus exsertis, marginibus revolutis, extus glabris, intus tenuiter puberulis, sinubus barbatis, c. 0·9 cm. longis, medio 0·4 cm. latis; coronæ foliolis exsertis dorso antherarum alte adnatis, carnosis e basi ovata attenuato-rostratis, apice obtuso supra stigma inflexis, antheris æquilongis; antheris oblongis, marginibus cartilagineis basi haud ampliatis, appendice hyalino rotundato obtuso apice in stigma inflexo; polliniis ovoideo-oblongis obtusis, glandula paulo majoribus, caudiculis divaricatis brevibus, glandula oblonga obtusa; stigmate apice subtruncato, margine incrassato.

Shire, Zambesi, at Chiromo, Jan., No. 3791.

A most distinct new species, which, from its appearance, would rather suggest *Pergularia* as the generic name than *Marsdenia*, but certainly belonging to the latter. From the few African species of the genus it is very distinct by the size and shape of the flowers, and may be nearest allied to the Abyssinian *Marsdenia Schimperi* Hochst., but from this it differs by the corona. Of other Marsdenias it resembles somewhat the American *M. Pringlei* Wats. and *M. umbellata* Griseb. *M. zambesiaca* is the southernmost species of the genus in Africa. The flowers appear to have been green in the living state, but turn brownish in drying.

TYLOPHORA R. Br.

TYLOPHORA LONGIPEDUNCULATA Schltr. *Sphærocodon longipedunculatum* K. Sch. in *Engl. Flor. Ost-Afr.* 326.

Ruwenzori, Butagu Forest, 8000 ft., No. 7973.

Sphærocodon longipedunculatum K. Sch. should, I consider, be placed in the genus *Tylophora*, of which it has the climbing habit, and exactly the same coronal structure. The genus *Sphærocodon* is, I confess, very nearly allied to *Tylophora*, and may, when we know more about it, be perhaps better regarded as a section of this, but at present it seems distinguished by its habit, beyond which there is nothing to separate the two genera.

SPHÆROCODON Bth.

SPHÆROCODON CAFFRUM Schltr. *Tylophora caffra* Meissn. in Hook. *Lond. Journ. Bot.* ii. (1843), 542. *Sphærocodon obtusifolium* Bth. in *Ic. Pl.* (1876), t. 1190. *S. natalense* Bth. *l. c.* sub t. 1190.

East side of Albert Edward Nyanza, on dry grassy hills, Aug., No. 8029.

TENARIS E. Mey.

TENARIS ROSTRATA N. E. Br. in *Gard. Chron.* xxiv. (1885), 39. *T. Volkensii* K. Sch. in *Engl. Flor. Ost-Afr.* (1895), 327.

Urundi and Karagwe, stony ground, Sept., 4000–5000 ft., No. 8211; stony places in Urundi, Sept., No. 8374.

BRACHYSTELMA R. Br.

Brachystelma shirense Schltr., n. sp. Herba simplex, erecta, c. 10–25 cm. alta; caule stricto, tereti, remote foliato, tenuiter piloso; foliis patentibus ovato- vel lanceolato-ellipticis, acutis vel acuminatis, basi in petiolum brevissimum attenuatis, utrinque tenuissime pilosulis, margine ciliatis, 4–13 cm. longis, supra medium 2–6 cm. latis; umbella terminali sessili- pauci- vel pluriflora, quam folia suprema breviore, pedicellis filiformibus tenuiter pilosis, 1–3 cm. longis; floribus late campanulatis, 7–1·5 cm. diametro; calycis segmentis linearibus vel lineari-lanceolatis acutis pilosis, 0·3–0·6 cm. longis; corollæ lobis utrinque glabris vel subglabris alte connatis, apicibus liberis subtriangularibus acuminatis, 0·6–1·2 cm. longis; corona more generis pro magnitudine corollæ minuta, foliolis in tubum subcylindricum alte connatis, apicibus liberis tripartitis, partitionibus subæquilongis, lateralibus triangularibus obtusiusculis, erectis, apice ciliatis, intermedio oblongo obtuso, supra stigma inflexo, antherifero, glabro; polliniis erectis, oblique rhomboideis, apice margine interiore anguste cristatis, caudiculis brevissimis, glandulæ ovoideo-lanceolatæ obtusæ basi insertis; stigmate generis truncatis.

Shire Highlands, Milanji, Dec., No. 8666; Shire-Zambesi, Chiromo, Jan., No. 8697; Shire Highlands, Scotchi, 4000–5000 ft., No. 8520.

A very distinct new species, most nearly allied to *B. Barberæ* Harv. from South-eastern Africa, but at once distinguished by the corolla, which in *B. Barberæ* has the tip united at the top, as in the genus *Dichælia*. The size of the flowers in our plant seems to be very variable; in No. 8666 they are just twice as large as in No. 8520; but, besides this, I cannot find anything else to separate the two.

CARALLUMA Wight et Arn.

There is one number evidently belonging to this genus, but without flowers, and therefore indeterminable (No. 6208).

EXPLANATION OF PLATE 351.—*Pleurostelma africanum* Schlecht. (for description see p. 303). Plant nat. size. 1. Flower. 2. Ditto, corolla and stamens removed. 3. Corona and andrœcium. 4 & 5. Two views of a corona-scale. 6. Anther. 7. Pollinium. (1–7 enlarged.)

EAST AFRICAN FUNGI.

By Annie Lorrain Smith.

The Fungi included in the following list were collected by Mr. G. F. Scott Elliot, Dr. Gregory, and the Rev. W. E. Taylor, of the Church Missionary Society, Mombasa. Mr. Scott Elliot travelled from Mombasa round the mouth of the Victoria Nyanza to Mt. Ruwenzori, and then southwards to the mouth of the Zambesi. He collected all along the route, although most of the specimens are from the high lands of Mt. Ruwenzori. Many species of the *Agaricineæ* were unfortunately no longer recognizable when they reached this country. Dr. Gregory collected on the journey from the coast to Mt. Kenia and back again; a considerable number of the woody *Polyporeæ* brought home by him were destroyed by beetles. The specimens sent home by Mr. Taylor were gathered on the Rabai Hills; among them was the beautiful *Polystictus Holstii* P. Henn, a new species described in the first part of Prof. Engler's *Pflanzenwelt Ost Afrika's*, lately published. Mr. Scott Elliot brought home a *Crotalaria* with Æcidia growing on the leaves, which I have considered identical with *Æcidium Crotalariæ* P. Henn. The Æcidia are more scattered than they are in the specimens from Usambara, but the microscopic measurement and the colour of spores and of Æcidia correspond.

I have to thank Mr. J. B. Carruthers, F.L.S., for assisting me in naming the specimens brought home by Dr. Gregory, and I wish also to express my thanks to the officials of the Botanical Department of the British Museum for their interest and help. Mr. Lister has very kindly named the Mycetozoa.

Gasteromycetes Willd.

Dictyophora phalloidea Desv. Ruwenzori, 6000 ft., Wimi, June, *Elliot*, 273.—Tropical America, Asia, Australia, New Guinea.

Cyathus Poeppigii Tul. Ruwenzori, in forests some 8000 ft., May and June, *Elliot*, 240.—West Indies, Central and South America.

Crucibulum vulgare Tul. Ruwenzori, 9000 ft., open dry places, *Elliot*, 130.—Distribution universal.

Cycloderma apiculatum, n. sp. Peridio exteriori globoso, rugoso, fuliginoso, apice umbonato, interiori papyraceo, separabili, ochraceo; columella alba, medio constricta; glebæ maturæ filamentis dilutius fuliginosis; sporis concoloribus, minutis, sphæricis.

Hab, Ad terram silvestram, Ruwenzori, 8000 ped. Siccum, circiter 1·5 cm. diam., *Elliot*, 202.

Geaster saccatus Fr. Ruwenzori, 8000 ft., forest on ground, May, *Elliot*, 202, 181, 200.—N. and S. America, Australia, Tasmania.

Lycoperdon brasiliense Speg. Ruwenzori, 8000 ft., forest, May, *Elliot*, 145.—Brazil.

L. constellatum Fr. Yeria, Ruwenzori, 8–9000 ft., May, *Elliot*, 198.—Europe and N. America.

HYMENOMYCETES Fr.

PLEUROTUS APPLICATUS Batsch. Yeria, Ruwenzori, 8-9000 ft., May, June, *Elliot*, 250.—Wide distribution.

SCHIZOPHYLLUM COMMUNE Fr. Shire, *K. C. Cameron.* Buddu, on palm-stems in marshes, *Elliot*, 102; on ground, *Elliot*, 107. Masai, 6000 ft., on old wood, *Elliot*, 62. Chilomo, Lower Shire, Zambesi, *Elliot.* Gopo lal Mari, 9th June, *Gregory.*—Wide distribution.

CREPIDOTUS MOLLIS Schaeff. Shire Highlands.—S. America, Borneo, and Australia.

POLYPORUS BRUMALIS Fr. Kiarutanga, on palm-stems, *Elliot*, 105.—Europe, America, Cape of Good Hope.

P. SULPHUREUS Fr. Near Kiduni, Uganda, on old logs in dense forest, *Elliot*, 98.—Europe, Asia, America.

P. GILVUS Schwein. Ruwenzori, 6–7000 ft., on dead logs, *Elliot*, 37.—Europe and S. America.

P. SCRUPOSUS Fr. Ruwenzori, 8000 ft., on trees, *Elliot*, 271.—Asia, S. America, Australia.

FOMES LUCIDUS Fr. Rabai Hills, Mombasa, Feb., *Rev. W. E. Taylor.* N.E. of Giri Mangea, sandy steppes, Aug., *Gregory.* Woods, Ngatana, Jan., *Gregory.* Ruwenzori, 8000 ft., on pine trees, *Elliot*, 259.—Distribution universal.

F. IGNIARIUS Fr. Ruwenzori, 8000 ft., on trees, *Elliot*, 272.—Distribution wide.

F. FULVUS Fr. Romai River, 7000 ft., on old trees, *Elliot*, 75. —Europe, Asia, America, Australia.

Polystictus Gregorii, n. sp. Pileo coriaceo-papyraceo, infundibuliformi, rotundato, subobliquo, radiatim rugoso, 2–8 cm. diam.; superne velutino, zonato, albido-griseo; zonis nunc griseis, nunc atris, plerumque sinuatis, margine tenui, atro, crispato-revoluto; hymenio griseo, poris minutis, rotundis vix decurrentibus; stipite brevi, atro-fusco, velutino, ad 1·5 cm. longo. Ad corticem, Mangea, Africa orientalis, *Gregory.*

P. SANGUINEUS Mey. Sabakhi Valley, E. of Makangeni, Aug., *Gregory.* Man Forest, 8000 ft., *Elliot*, 76.—Asia, S. America, West Indies, Pacific Islands, New Zealand, &c.

P. PERGAMENUS Fr. Ruwenzori, 8000 ft., forest, May, *Elliot*, 126.—N. and S. America.

P. CHRYSITES B. Guan Narok, June, *Gregory.*—Cuba, Brazil.

P. VERSATILIS B. S.E. of Mangea, woods, sandy soil, *Gregory.* —N. and S. America, Cuba, Philippine Islands, Borneo.

P. VERSICOLOR Fr. S. of south spur of Yatta, *Gregory.*—Distribution universal.

P. VELUTINUS Fr. Ngomeni, *Gregory.*—Wide distribution.

P. HIRSUTUS Fr. Nandi, 6000 ft., on logs, *Elliot*, 86. Wimi, Ruwenzori, 8000 ft., *Elliot*, 277. Athi Plains, 5-6000 ft., on dead logs, *Elliot*, 34 & 35.—Distribution universal.

P. OCCIDENTALIS Klotzsch. Chilome, Lower Shire, Zambesi, Dec., old logs, *Elliot.*

P. ELONGATUS B. Kibwezi, *Gregory.*—Distribution wide.

P. HOLSTII P. Henn. Rabai Hills, Mombasa, *Rev. W. E. Taylor.*

Trametes pictus B. Chilome, Lower Shire, Zambesi, Dec., *Elliot.*—Australia.

T. Sprucei B. Woods round Ngatana, *Gregory.* — Cuba and Brazil.

T. hydnoides Fr. Rabai Hills, Mombasa, Feb., *Rev. W. E. Taylor.*—N. and S. America, Mauritius.

Hexagonia polygramma Mont. *Elliot.*—America, Asia, and Australia.

Favolus Rhipidium B. Ruwenzori, 7–9000 ft., on trees in forest, *Elliot*, 154 & 187. Shire Highlands, Suchi, Dec., *Elliot.* Upper forest zone, Mt. Kenia, *Gregory.*—Asia, N. & S. America.

Laschia celebensis Pat. Yeria, Ruwenzori, 9–10,000 ft., on bamboos, May, *Elliot*, 200.—East Indian Islands.

L. cæspitosa B. Ruwenzori, 8000 ft., dense humid forest, May, *Elliot*, 159 & 169.—Australia and Malacca.

Hydnum ochraceum Pers. Ruwenzori, 8–9000 ft., forest, May, *Elliot*, 196.—Distribution wide.

H. glabrescens B. & Rav. Kivata, Ruwenzori, 6000 ft., *Elliot*, 138.—Carolina, Ceylon, Singapore.

Stereum hirsutum Fr. Woods round Ngatana, Jan., *Gregory.* Rengatan, Ndari, Leikipia, June, *Gregory.* On old branches, Man, 8000 ft., *Elliot*, 77.—Distribution universal.

S. lobatum Fr. Sabakhi Valley, *Gregory.* Guan Narok, June, *Gregory.* Alpine zone, Hohnel Valley, Kenia, June, *Gregory.* Sabakhi Valley, *Gregory.*

S. ochraceo-flavum Schw. Wimi Valley, 6400 ft., *Elliot*, 235. —America and Ceylon.

S. seriatum B. & C. Yeria, Ruwenzori, 8000 ft., forest, May, *Elliot*, 189.—Cuba.

S. Leveilleanum B. & C. Wimi, Ruwenzori, 8000 ft., June, *Elliot*, 246.—Carolina.

Hymenochæte rubiginosa Lév. Ruwenzori, 8000 ft., on trees, June, *Elliot*, 268.—Distribution wide.

Lachnocladium brasiliense Lév. Ruwenzori, 8000 ft., forest, May, *Elliot*, 194 & 163.—Brazil, Cuba.

Hirneola Auricula-judæ B. Ruwenzori, *Elliot*, 145, 89, 118, 112, 236. Kibwezi, *Gregory.*—Wide distribution.

Uredineæ.

Puccinia Asparagi DC. Mt. Ndei, *Elliot*, 23. *Æcidium* form only present on the leaves of asparagus.—Europe.

Æcidium Vangueriæ Cke. Kiduma, 5800 ft., Dec., *Elliot*, 47. On *Vangueria edulis.*—S. Africa.

Æ. crotalariæ P. Henn. Nandi, 6000 ft., *Elliot*, 87.

Æ. Vitis, n. sp. Æcidiis hypophyllis, rarius epiphyllis, pallidofuscis, in maculis irregularibus dense aggregatis; pseudoperidiis pallidis, rotundatis, 230 μ diam., margine lacerato; æcidiosporis suboblongis, circa $15 \times 20\ \mu$. In Vitis foliis, Matschakos, 5000 ped., *Elliot*, 29.

Æ. Heteromorphæ, n. sp. Spermogoniis malleo-flavis; æcidiis in pustulis brunneis longis aggregatis; pseudoperidiis pallidis ro-

tundatis vel oblongis, 370–500 μ diam., æcidiosporis suboblongis 15 × 25 μ, pallido-flavis. In Heteromorphæ caulibus et petiolis, Yeria, Ruwenzori, 10,400 ped., *Elliot*, 184.

Æ. Acanthi, n. sp. Maculis flavis, irregulariter rotundatis, æcidiis hypophyllis, laxe aggregatis; pseudoperidiis pallidis 260 μ diam., margine reflexo, lacerato, e cellulis hexagonis verrucosis, albidis, compositis; æcidiosporis subglobosis vel oblongis, hyaline flavescentibus 15 μ vel 15 × 25 μ. In Acanthi sp. foliis Man, Ruwenzori, 7000 ped., *Elliot*, 66.

PYRENOMYCETES Fr.

Dimerosporium Elliotii, n. sp. Peritheciis gregariis vel sparsis superficialibus minutis 160 μ diam., atro-brunneis, globosis, undique hyphis exiguis fuligineis instructis; ascis cylindraceo-clavatis 55 × 8–10 μ., paraphysibus filiformibus; sporis ovoideis, 1-septatis, medio constrictis, hyaline viridibus, 16 × 6–8 μ. In Ericæ arboreæ foliis Butagu Valley, Ruwenzori, 9–12,000 ped., *Elliot*, 263.

XYLARIA POLYMORPHA Grev. Wimi, Ruwenzori, 8000 ft., forest, June, *Elliot*, 264.—Europe, Asia, America, Australia.

X. HYPOXYLON Grev. Ruwenzori, 8000 ft., *Elliot*, 265, 120, 101.—Europe, Asia, S. Africa, Australia.

X. DIGITATA Grev. Ruwenzori, 8000 ft., May, *Elliot*, 206.—Europe, America, Ceylon, Java.

Nectria fuscostoma, n. sp. Peritheciis gregariis, confertis, luteo-flavis, pilosis, subglobosis, 280 × 330 μ, apice fusco-rostratis; ascis clavatis, 80 × 10 μ; paraphysibus filiformibus; sporis 1-septatis, ellipticis, hyalinis, leviter constrictis, 18 × 5 μ. In Bambusarum vaginis foliaribus; Yeria, Ruwenzori, 8–9000 ped., *Elliot*, 262.

Hypocrea alba, n. sp. Sublibera, rotundata, hemisphærica, vel pulvinata, alba; peritheciis minutis, globosis, immersis, flavis, 140 μ diam., ostiolis punctiformibus, fuscis; ascis cylindraceis, 40 × 4·5 μ; sporis monostichis, hyalinis, e duabus cellulis æqualibus compositis, cellulis singulis globosis, 3·5–4 μ diam. Ad ramos siccos, Masai, 6000 ped., E. Africa, *Elliot*, 58.

Gibberella violacea, n. sp. Peritheciis cæspitoso-stromaticis, subglobosis, 180 × 200 μ, poro apicali instructis, violaceis; ascis clavatis, octosporis, 60 × 8 μ, sporis hyalinîs 1-septatis, 10 × 4 μ; conidiis septatis, fuscis, *Macrosporiis* similibus. Ad corticem, Ruwenzori, 6000 ped., *Elliot*, 223.

PHYLLACHORA GRAMINIS Fuck. Usoga and Uganda, *Elliot*, 91, 94. Mt. Kenia, *Gregory*.—Europe, Asia, and N. and S. America.

Dothidella effusa, n. sp. Stromatibus epiphyllis, folii totam superficiem obtegentibus; peritheciis rotundatis, confertis, extus fuligineo-nigris, usque ad 240 μ diam.; ascis cylindraceo-clavatis, 90–120 × 20 μ; sporis fuscis, ellipticis, utrinque obtusiusculis, 1-septatis, 22 × 8 μ. Ad Asclepiadis folia, Nakuro, Ruwenzori, 6000 ped., *Elliot*, 55.

DISCOMYCETES Fr.

SARCOSCYPHA COCCINEA Jacq. Kivata Forest, Ruwenzori, 8–9000 ft., May, *Elliot*, 201.—Europe, N. America, S. Africa.

LACHNEA SCUTELLATA Gill. Ruwenzori, *Elliot*. — Europe, N. America, Java, Tasmania.

DASYSCYPHA BICOLOR Fuck. On old sticks, Ruwenzori, 6000 ft., May, *Elliot*, 162.—Europe, N. America.

Velutaria subsessilis, n. sp. Cupulis gregariis, tum sessilibus tum brevissime stipatis, discretis vel confluentibus, usque ad ½ mm. latis, extus pulveraceo-tomentosis brunneo-flavis, disco plano cavi-usculove fusco; ascis stipitatis, clavatis, 8-sporis, $130 \times 15\ \mu$; sporis lineari-ellipticis, utrinque parum attenuatis, 4-septatis, hyalinis, $30 \times 5\ \mu$.

On old bark, Ruwenzori, 6600 ft., May, *Elliot*, 136. This species differs from others in the genus in the possession of a short stalk. In other respects it is a typical *Velutaria*.

HYPHOMYCETES Mart.

Coniosporium pulvinatum, n. sp. Acervulis linearibus, ⅛–1 unc. longis, atro-fuscis, pulvinatim emersis, erumpentibus; conidiis lenticulari-compressis, $10\ \mu$ diam., fuligineis. Ad Bambusarum caules, Kivata, Ruwenzori, 9–10,000 ped., *Elliot*, 192.

STILBUM KALCHBRENNERI Sacc. Matochukos, *Elliot*, 27. — S. Africa.

MYCETOZOA.

DIACHÆA ELEGANS Fr. Ruwenzori, in forest, *Elliot*, 183.

DIDYMIUM FARINACEUM Schrad., var. MINUS. Ruwenzori, forest, 8000 ft., *Elliot*, 183. It has coarser capilitium and larger spores than in the typical *minus*.

STEMONITIS SPLENDENS Roxb., var. GENUINA. Rubaga, Ruwenzori, 10,000 ft., *Elliot*, 251.

SHORT NOTES.

SONCHUS PALUSTRIS PLANTED IN SUSSEX.—It has recently come to my knowledge that *Sonchus palustris* has been planted near Newhaven. It is worth putting the fact on record.—G. C. DRUCE.

A NEW BROMUS.—**Bromus interruptus** mihi. Panicula, florem et fructum gerens, erecta angusta evidenter *interrupta*. Palea superior et interior (gluma florens superior) pæne ad basin in binas angustas lanceolatas partes. Syn. *B. mollis* var. *interrupta* Hackel in *Rep. Bot. Ex. Club*, 1880, p. 240. A more detailed description will appear later in this Journal.—G. CLARIDGE DRUCE.

ROSA MOLLIS Sm., var. GLABRATA Fries.—In this Journal for 1888, p. 67, Scheutz described a rose gathered by the Rev. E. F. Linton at Strome Ferry, Ross-shire, and named it as above. This form is not uncommon in at least one part of the west coast of Inverness-shire, where I have watched it for some years. I could not think it to be other than a form of *R. tomentosa*, and this year sent several specimens, including some in ripe fruit, to Prof. Crépin, remarking at the time that I thought it must be a *tomentosa* form. In reply he wrote, "You are perfectly right in considering these specimens as belonging specifically to *R. tomentosa.* Scheutz was mistaken in placing this same variety, gathered by Mr. Linton in Ross-shire, to *R. mollis* Sm., var. *glabrata* Fries." I think that any one having had the opportunity of watching this plant in different stages of growth in its native locality could hardly arrive at any other conclusion. The prickles are generally straighter than in many forms of *R. tomentosa*, but it has quite the habit of that plant as it occurs on this coast. In poor soil the branches are only slightly arching, as is similarly the case with some forms of *R. tomentosa.* In good soil it is an arching bush, sometimes highly so, and quite as much as in other forms of that plant. The sepals also soon disarticulate, as in *R. tomentosa*, and are not truly permanent, as in *R. mollis.* As a consequence of the above determination by Prof. Crépin, *Rosa mollis* Sm., var. *glabrata* Fries, cannot yet be considered as having been found in Britain.—SYMERS M. MACVICAR.

NEW WESTERNESS PLANTS.—In the course of some time spent in June and July of this year in the S.W. corner of Inverness-shire (v.-c. 97), I found the following plants, which Mr. Arthur Bennett tells me are new records for Westerness (including *Carex fusca*, new to Great Britain). I have to thank the Rev. W. Moyle Rogers for kindly naming brambles and roses, and my friend Mr. Bennett for much time and trouble kindly bestowed on my somewhat bulky parcels of Scottish plants; he has verified all of the new records where the plant was at all doubtful:—*Thalictrum dunense* Dum., *Cakile maritima* Scop., **Lychnis alba* Mill. (near cottages, doubtfully native), *Sagina apetala* L., *Medicago lupulina* L., *Vicia sylvatica* L., *Rubus villicaulis* b. *Selmeri* (Lindeb.), *Rosa rubiginosa* L. (large-leaved form), *Galium uliginosum* L., *Lactuca muralis* Fresen., *Campanula latifolia* L., *Samolus Valerandi* L., *Stachys arvensis* L., *Lamium intermedium* Fr., *Atriplex laciniata* L., *Salsola Kali* L., *Potamogeton alpinus* Balb., *Carex Boenninghausiana* Weihe, *C. fusca* All., *C. lævigata* Sm., *Deschampsia discolor* R. & S., *Festuca elatior* L., *Agropyron caninum* Beauv., *A. junceum* Beauv.—W. F. MILLER.

RUBUS CARDIOPHYLLUS Lefv. & Muell. — British batologists will learn with interest that Messrs. O. Gelert and K. Friderichsen have at last enabled us to give a definite name to our prevailing British form of *R. rhamnifolius*, which they find also in Slesvig and in the island of Fionia. Some months ago they wrote to me that they were satisfied of its identity with the French plant *R. cardiophyllus* Lefv. & Muell., which was described by Mueller in *Pollichia* in 1859, and again by Genevier under the same name in his Monograph. I now have their specimens before me, together with a French one collected by M. Letendre, and am convinced that there is no room for doubt on the point. As we certainly have several forms of this species in Britain, it seems best to retain the name *rhamnifolius* sp. coll. for the *aggregate.*—W. MOYLE ROGERS.

MOLINIA CÆRULEA var. OBTUSA. — About the middle of July Mr. W. de H. Scott sent to the Natural History Museum, South

Kensington, a curious form or variety of *Molinia cærulea* Moench, which he gathered on Bisley Common. It was referred to Prof. Hackel, who states that it differs from the type "chiefly by the blunt apex of the flowering glumes, which are oblong, not subconical lanceolate. The flowers are also somewhat smaller than usual; the sterile glumes are broader and more blunt." Prof. Hackel states that he has the same plant from the Tyrol (Klobenstein, near Bozen), that he believes it to be *Molinia obtusa* Peterm. (in *Flora*, 1844, i. 235), and that he proposes to call it *M. cærulea* var. *obtusa*.—E. G. BAKER.

NOTICES OF BOOKS.

MR. JACKSON'S INDEX.

Index Kewensis Plantarum Phanerogamarum Nomina et Synonyma . . . . . Confecit B. DAYDON JACKSON. Fasciculus iv. [4to, pp. 541–1299. Psidium to end.] Oxonii e prelo Clarendoniano [Oct.] MDCCCXCV. £2 2s. net.

THE conclusion of Mr. Jackson's great work brings with it ground for satisfaction and disappointment. The former feeling, of course, greatly predominates; and all botanists will concur in congratulating the compiler on having brought his laborious undertaking to a successful issue. The constant opportunities which I have had of checking the references enables me to join in the congratulations with the fullest knowledge that they are well deserved. The somewhat ample notices which have been given of each part of the *Index* as it appeared have pointed out that slips have occurred; this was inevitable, but it is their fewness, not their number, which is remarkable. An appendix of "addenda et emendenda graviora hactenus notata" occupies about forty pages of the present part, and includes such corrections as have been made during the progress of the work. No reference is made on the title-page to this appendix, which is therefore in danger of being overlooked.

This brings me to the serious omission which detracts greatly from the interest and even from the usefulness of the book. When noticing the first instalment,* I had reason to anticipate that, with the concluding part of the work, Mr. Jackson would give an account of its history. This, I venture to say, was the more necessary on account of the (of course unintentionally) misleading preface by Sir Joseph Hooker—a preface from which Mr. Jackson's name is entirely omitted, the credit for the work being divided between Mr. Darwin, Sir Joseph himself, and the staff of the Kew Herbarium. Mr. Jackson's name indeed appears on the title-page, but in the second place, while the book is lettered on the cover as by "Hooker & Jackson." The erroneous impression is strengthened by the inclusion of the book in the list of "works in preparation at the Royal Gardens, Kew," which appears on the cover of the *Bulletin of Miscellaneous Information* for September, where, moreover, it is stated to be "by Sir Joseph Hooker and Mr. B. Daydon Jackson." Geographically, no doubt, this connection of the work with Kew is accurate, though the statement that it was "in preparation" during September is inexact; but the intrusion of the word "Kewensis" on the title, the omission of the actual compiler's name from the preface, and the ascription of the book to a joint authorship is misleading, and in the opinion of many besides myself conveys a false impression. I will add that I personally need no acknowledgement of such help as I was able to give to Mr. Jackson; but it was by permission of Mr. Carruthers that, in consideration of the importance of the *Index* to botanical science, I was allowed to read and check the proofs during official hours, and it was understood that the British Museum should be acknowledged in the preface. I am sure that Mr. Jackson would have carried out this understanding, and that the omission of the preface is not in accordance with his desires.

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* *Journ. Bot.* 1892, 311.

An introduction was moreover absolutely essential to the understanding of the plan of the book. The readers of this Journal are indeed in possession of information as to the general lines laid down; this will be found in the volume for 1887 (pp. 66, 150) and in other places. But even the fact that the *Genera Plantarum* of Bentham and Hooker has been taken as the basis of the work cannot be ascertained from the book as it stands; and the numerous and important points necessary to its right using must be guessed at, for they are nowhere stated within its covers. Mr. Jackson has been extremely careful to abbreviate intelligently the titles of the very numerous works he has quoted; perhaps it would have been too much to expect a list of these, although, if in chronological order, such a list would have done much to supply the unfortunate omission of the dates of the species. In an introduction we should have been informed why, for example, M. Gandoger's species are passed over; and certain almost inevitable inconsistencies in citation might have been put straight—in short, the book as it stands is incomplete. I am glad to see that the *Gardeners' Chronicle* takes the same view as that which is here expressed, It is to be hoped that the Supplement which M. Durand and Mr. Jackson have in hand, bringing the enumeration down to the present year, will supply what is so urgently needed.

The present instalment does not differ from the previous parts of the work, and merits equal praise. There are, as usual, a few slips, but there is no need to point them out. One such will be found under *Uncaria*, where for

"sessilifructus, Roxb. Hort. Beng. 86; Fl. Ind. i. 520 [1832]"

should be read—

sessilicarpa, Roxb. Hort. Beng. 86 = (nomen) sessilifructus—
sessilifructus Roxb. Fl. Ind. i. 130 (1820).

I fail to see why Carey's edition of the *Flora Indica* (1832) should be quoted in preference to Wallich's (1820–1824)—perhaps the missing introduction would have explained.

One wonders why *Saussurea eriolepis*, a MS. name of Bunge cited in DC. Prod. vi. 535, under *S. discolor β. elatior*, should take precedence of *S. amurensis* Turcz., published (as a species) on p. 534. *Scabiosa sericea* Jord. certainly does *not* "= graminifolia," if specimens distributed and named by him are of any value. If *Stevia* "*multiaristata* Spreng. Syst. iii. 449 = saturiæfolia" of Schultz-Bipontinus, it is manifest that the former must stand, as being the older name. British botanists will wonder what has become of *Sparganium ramosum* Huds.: even those who prefer to quote Curtis as the authority for the restricted plant will allow that Hudson's earlier use of the name should have been cited.

But criticisms of this kind do not detract from the value of Mr. Jackson's great work, for which he merits and will receive the thanks of all botanists.

James Britten.

Sechs Pflanzenphysiologische Abhandlungen von Thomas Andrew Knight (1803–1812). Uebersetztund herausgegeben von H. Ambronn. 8vo, pp. 63. Engelmann, Leipzig. 1895. Price 1 Mark.

This little volume is No. 62 in the series of Ostwald's *Klassiker der Exakten Wissenschaften*, to which belong the editions of Sprengel and Kolreuter previously noticed in the *Journal of Botany*. The six memoirs are representative of Knight's work on Plant-physiology, and in this handy and cheap form will no doubt be a welcome addition to the library of the German botanical student. The selected papers are as follows:—(1) On the direction of the radicle and germen during the vegetation of seeds; (2) On the causes which influence the direction of the growth of roots; (3) On the motions of the tendrils of plants; (4) Account of some experiments on the descent of the sap in trees; (5) On the inverted action of the alburnous vessels of trees; and (6) On the reproduction of buds. These all appeared in the *Philosophical Transactions* of the Royal Society between 1803 and 1812. The translator has also added a brief biographical notice, and a few remarks on the above-mentioned papers, in which he points out that our knowledge of the ultimate causes of some of the phenomena investigated by Knight has not much increased since his day. We are no nearer to a true explanation of the reaction between growing organs and gravity, though we sometimes hide our ignorance under long Latin names. At the end of the book is a list of Knight's numerous papers, appearing not only in the *Philosophical Transactions*, but also in the Horticultural Society's publications, and a few elsewhere. A comparison of the translation and the original memoirs shows that the latter have been accurately rendered.

A. B. R.

Blumenbiologische Floristik des mittleren und nördlichen Europa sowie Grönlands. Systematische Zusammenstellung des in der letzten zehn Jahren veröffentlichten Beobachtungsmaterials. Von Dr. E. LOEW, Professor am Königl. Realgymnasium zu Berlin. Stuttgart: F. Enke, 1894. 8vo, pp. viii, 424.

NOTHING more clearly illustrates the vast influence exerted on modern science by Darwin than the extensive literature that has sprung up within the last few years on even comparatively subordinate questions of philosophical natural history. In 1873 Hermann Müller published his work on the Fertilization of Flowers, and followed it up in 1881 by a book on Alpine Flowers; and the list of books and papers which Dr. Loew has used in the preparation of the present volume fills fourteen very closely printed pages, in eight different languages.

The various floras dealt with in connection with the visits of insects are the Central European mountain flora, the Pyrenean, the Scandinavian mountain flora, the Arctic, the Sub-Atlantic coast-districts (Holland, Belgium, the German islands in the North Sea, and Schleswig Holstein), and, lastly, the Central European low-lying and hill flora. Under each district a list of plants is given, with an indication of their several characters, and of the insects by which they are visited. Much general information is also prefixed and appended to each section, and in part tabulated. The book contains much information which will be highly interesting both to botanists and entomologists, and will also indicate a class of observations which will prove both easy and interesting, and which, if carefully and accurately noted, may prove of real scientific value. We have no space to discuss it in detail, but translate two short extracts taken at random :—

"*Sisymbrium officinale* Scop. AB. [indicating a flower with honey partly concealed]. At first the longer stamens stand at the same height as the pistil, but afterwards surpass it; and at the same time the shorter stamens also lengthen, till they finally equal the pistil in height. Visited in the islands of North Friesland by *Apis* and Lepidoptera (2), (Kunth).

"*S. Sophia* L. AB. [*vide supra*]. Flowers inconspicuous, expanding only 3 millim. (Kunth).

"*S. Thalianum* Gay (= *Stenophragma Thal.* Celak.). AB. [*vide supra*]. Honey frequently not secreted (Kunth)." (p. 136.)

"*Campanula rotundifolia* L. H. [a flower visited by bees and humble bees]. Visited, on the islands of North Friesland and at Kiel (Kunth), by *Apis*, *Bombus* (2), and Lepidoptera (1); in Belgium (MacLeod) by *Bombus* (1) and Diptera (1).

"*C. patula* L. Visited in Belgium by *Chelostoma* (1) and *Pieris* (MacLeod)." (p. 153.)

W. F. K.

ARTICLES IN JOURNALS.

Annals of Botany (Sept.). — R. H. True. 'Influence of Sudden Changes on Growth.' — H. H. Dixon & J. Joly, 'The Path of the Transpiration-current.'— G. Massee, '"Spot" Disease of Orchids' (1 plate). — J. E. S. Moore, 'Essential similarity of Chromosome Reduction in Animals and Plants.' — J. Beard & J. A. Murray, 'Phenomena of Reproduction in Animals and Plants.' — J. B. Farmer, 'Spore-formation and Nucleus-division in *Hepaticæ*' (3 plates).

Bot. Centralblatt (No. 38). — S. Nawaschin, 'Ein neues Beispiel der Chalazogamie.'—(Nos. 40, 41). F. Ludwig, 'Ueber Variationskurven und Variationsflächen der Pflanzen' (2 pl.).

Bot. Gazette (Sept. 25). — J. C. Arthur, 'The Development of Vegetable Physiology.'—F. M. Andrews, 'Development of embryosac of *Jeffersonia*' (1 pl.).—L. H. Dewey, *Laphamia ciliata*, sp. n.

Bot. Zeitung (Oct.). — F. Hegelmaier, 'Ueber Orientirung des Keimes in Angiospermensamen.'

Bull. Torrey Bot. Club (Sept. 30). — G. Macloskie, 'Antidromy of Plants.'—F. H. Knowlton, 'New problematical plant from Lower Cretaceous of Arkansas' (*Palæohillia arkansana*). — F. E. Lloyd, Germinating Acorns (1 pl.).—F. L. Harvey, 'Characeous plants of Maine.'—J. K. Small, 'Teratological Notes.'

Erythea (Oct. 1).—F. L. Bioletti, 'Notes on *Nemophila*' (1 pl.).

Gardeners' Chronicle (Sept. 28). — *Odontoglossum aspidiorhinum* Lehm., *Ceropegia debilis* N. E. Br., spp. nn. — W. B. Hemsley, '*Aristolochia elegans* in Africa.'—(Oct. 5). *Asplenium Oroupouchense* Prestoe, sp. n.

Journal de Botanique (Sept. 16-Oct. 16). — G. Poirault & M. Raciborski, 'Sur les noyaux des Urédinées.' — (Sept. 16). A. de Coincy, 'Plantes nouvelles de l'Espagne.'— C. Sauvageau, 'Sur les sporanges pluriloculaires de l'*Asperococcus compressus*.'—E. Rose, '*Chelidonium laciniatum* Miller.'—(Oct. 1). E. Bornet, 'Geographie botanique de la Tunisie.' — C. Sauvageau, *Ectocarpus Battersii*.—(Oct. 1, 16). A. Franchet, 'Plantes nouvelles de la Chine occidentale.' — (Oct. 16). C. Sauvageau, '*Radaisia*, nouveau genre de Myxophycée' (1 pl.). — C. Brunotte, *Isatis tinctoria* & *Trifolium resupinatum* à Nancy.

Journ. Royal Microscopical Soc.—(Oct.). J. B. Farmer, 'Division of the Chromosomes in *Lilium*' (1 pl.).

Oesterr. Bot. Zeitschrift (Oct.).— E. Hackel, *Neurachne Muelleri*, sp. n. — G. Gjokic, 'Ueber die chemische Beschaffenheit der Zellhäute bei den Moosen.'—J. Rompel, 'Drei carpelle bei *Cryptotænia canadensis*.' — E. Halácsy, 'Zur Flora von Griechenland' (cont.).— J. Freyn, 'Plantæ Karoanæ' (cont.).— W. Schmidle, 'Zur alpinen Algenflora' (2 pl.).

BOOK-NOTES, NEWS, &c.

We have received the eleventh Report of the Watson Botanical Exchange Club, which does not differ greatly, except in its smaller size, from the reports issued by the older Botanical Exchange Club, and, like them, contains notes by Mr. Arthur Bennett and the Revs. W. Moyle Rogers and W. R. Linton, the last-named acting as distributor. We fail to see any reason why this body should not be united with the Exchange Club, while at least one good argument in favour of such a change is to be found in the extraordinary number of typographical errors which disfigure the Watson Club Report, showing the need of a competent editor. The following note contains so many puzzles that, having solved them for our own benefit, we think it may be well to print the translation for the benefit of those into whose hands the Report may come. We follow the original as closely as possible, but suspect some error in the reference to Opiz's "description" in his "Fl. Böhm.," which, from the citation in Berchtold & Opiz's *Flora Böhmens*, we should judge to be a MS. list.

Here is the original, with the suggested corrections:—

"*Sesleria coerulea*, Scrp., v. *flavescens*, More. Castle Taly, Co. Galway, 16th May, 1892.—H. C. Levinge. I suppose this is what is called v. *alba*, Camus Cat. des Pl. de France, p. 292 (1888); but it was named *P. lutea* by Opiz. But several nice points arise over this; Opiz described it in his Fl. löh. supt. Cent. 6, n. 560, under *Sesleria coerulea*, Arducino animado, sp. 2, 18 (1764), not Schpuli ed. 2 (1772), while Derchtold and Opiz in the Fl. Böh. (part 2, 1836) p. 491, place it under *Sesleria calcaria* Persom (1805); Syn., pl. i, 72. They also quote "*Sesleria coerulea* variet. flor. luteo albo Knap in litt." I have not seen Andrews' work so do not know whether there is any reason if his name is untenable?"

Sesleria coerulea Scop., v. *flavescens*, More. Castle Taylor, Co. Galway, 16th May, 1892.—H. C. Levinge. I suppose this is what is called v. *alba*, Camus Cat. Pl. France p. 292 (1888); but it was named v. *lutea* by Opiz. But several nice points arise over this. Opiz described it in his Fl. Böhm. supt. Cent. 6, n. 560, under *Sesleria coerulea*, Arduino animadv. sp. alt. p. xviii (1763), not Scopoli ed. 2 (1772); while Berchtold and Opiz in Fl. Böhm. (part i, 1836), p. 491, place it under *Sesleria calcaria* Persoon Syn. Pl. i, 72 (1805). They also quote "*Sesleria coerulea* variet. flor. luteo albo Knap in litt." I have not seen Arduino's work, so do not know if there is any reason why his name is untenable.

We do not know whether questions of botanical nomenclature are about to be transferred to another region of thought, but we observe that Mr. Cattell, who looks after psychology for *Science*, reprints in that journal his note which we published in our September issue. To this he subjoins our note and a portion of Mr. Erwin Smith's remarks (which we quoted at greater length on p. 281), with parts of the *Botanical Gazette* article to which we referred; he further points out that we do not withdraw the charges made on p. 212 of this Journal. We are not able to afford space for a lengthy discussion of the matter, but must content ourselves with saying that the special charge of suppression which has so disturbed the psychological editor of *Science* was not made by us, and that we therefore cannot withdraw it. Mr. Cattell asked us to publish his contradiction, and we did so, printing at the same time Mr. Erwin Smith's version of the matter.

The fact that adverse criticism has been suppressed, even when so eminent a man as Asa Gray was the critic, cannot be denied, nor have we the faintest intention of withdrawing what we have said regarding this discreditable business. Mr. Cattell will find this, with the comments of Mrs. Gray and Sereno Watson, and Dr. Britton's attempted justification of his action, in our Journal for 1894, p. 19. Seeing that Dr. Britton is the botanical editor of *Science*, it seems strange that he should have left a matter connected with botanical nomenclature to be dealt with by his psychological colleague. We may remark that, although copies of *Science* containing Mr. Cattell's selection of extracts appear to have been sown broadcast, none has reached the Editor of this Journal. This accident—for we cannot suppose any discourtesy was intended—is the more remarkable because no fewer than four copies have been received by his colleagues in the Botanical Department.

We are reminded that the annual Reports of the Botanical Exchange Club have not lately been noticed in our pages. We are sorry for this neglect, which has arisen from the fact that we were anxious to give a more detailed notice of these reports than such as is afforded by a paragraph, and the demands on our space have rendered this almost impossible. We hope to notice the Report for 1894, just to hand, in an early issue; meanwhile we must point out that our record of *Spartina stricta* as new to the Isle of Wight (p. 315) was anticipated by the Rev. E. F. Linton in the Exchange Club Report for 1893, p. 427.

John Ellor Taylor, for more than twenty years Curator of the Ipswich Museum, died at Ipswich on Sept. 28th. He was born in 1855 at Levenshulme, near Manchester, where his father was foreman in a cotton factory. His scientific work was mainly geological, but he was best known as a lecturer on scientific subjects, which he treated in an attractive and popular manner. He published in 1878 a book entitled *Flowers, their Origin, Shapes, Perfumes, and Colours*, and in 1884 *The Sagacity and Morality of Plants*, "a sketch of the life and conduct of the vegetable kingdom," which is noticed in this Journal for the same year, p. 184; and edited *Science-Gossip* from 1872 to 1893. He was elected a Fellow of the Linnean Society in 1873.

We have to record the death of Prof. Willkomm, in his seventy-fifth year, and of Dr. Robert Brown (Campst.), who died at Streatham on Oct. 26th. We hope to give a further notice later.

A bronze bust of Robert Brown was unveiled on the 18th of October at Montrose, his native place. The ceremony was performed by his kinswoman, Miss Paton, who has provided the bust and presented it to the town. A detailed account will appear in our next number.

CONTRIBUTIONS TO SOUTH AFRICAN ASCLEPIADOLOGY.

By R. Schlechter.

(Continued from p. 274.)

DECAS IV.

31. Secamone Gerrardi Harv. MSS. Frutex volubilis, glabra, alte scandens; ramis teretibus verruculosis, dense foliosis; foliis patentibus ovato-oblongis oblongisve subacutis vel breviter acuminatis, subcoriaceis, utrinque glabris, brevissime petiolatis, 2·5–4·5 cm. longis, medio 1·3–2·5 cm. latis; floribus pro genere majoribus, in cymis alternantibus extra-axillaribus, laxis, multifloris, folia excedentibus, pedunculo pedicellisque glabris teretibus; calycis segmentis ovatis obtusissimis vel suborbicularibus glabris, margine tantum ciliatis; corollæ lobis in tubum subcylindricum ad medium usque connatis, apicibus liberis patentibus oblongis obtusis glabris, 0·4 cm. longis, vix 0·2 cm. latis, calycem 4-plo superantibus, fauce intus pilis reflexis ornatis; coronæ foliolis dorso antherarum adnatis ligulatis carnosis, antheras dimidio excedentibus, apice subinflexis; antheris angustis marginibus cartilagineis angustissimis, marginibus loculorum rotundatis, appendice subhyalino minuto suborbiculari; polliniis generis.

Natal, *Gerrard & McKen.* Inter frutices scandens, Berea, prope Durban, *J. M. Wood*, No. 4497. In silvis prope Komgha (Kaffrariæ), alt. c. 2000 ped., Nov. 1893, *H. G. Flanagan*, No. 376. In fruticetis prope flumen Kei River, alt. c. 2000 ped., 12 Jan. 1895, *R. Schlechter*, No. 6249.

Although well known in South Africa under the above name, this species has never been described, and the name only is mentioned in the *Genera Plantarum* ii. 746. It is the third South African species of *Secamone.* The large and long-pedicellate flowers distinguish it at once from both *S. Thunbergii* E. Mey. and *S. frutescens* Dcne. The two latter species are very widely spread over South Africa, *S. Thunbergii* being common in the western regions as well as in the east, where it even occurs in the tropics; *S. frutescens* beginning about at George, and being pretty common all through Kaffraria, Natal, and East Griqualand, and passing also into the tropical regions of the Transvaal. *S. Gerrardi* seems to be confined to a small stretch of country along the coast from East London to Zululand.

The flowers are brownish outside, olive-green inside.

32. Astephanus pauciflorus E. Mey. *Com. Pl. Afr. Austr.* (1838), p. 224. Frutex glaberrima, volubilis, alte scandens; ramis gracillimis teretibus, remote foliatis; foliis patentibus patulisve subcoriaceis, lineari-lanceolatis vel lineari-oblongis acutis vel brevissime acuminatis, utrinque glabris, 7–45 cm. longis, petiolo brevi vix 0·2 cm. longo, medio 2–3 cm. latis; floribus in umbellis extra-axillaribus paucifloris (2–3) patulis, pedunculo pedicellisque filiformibus tenuissime puberulis, foliis paulo brevioribus vel subæquilongis; calycis segmentis lanceolatis acutis tenue puberulis,

corollæ tubum æquantibus, 0·2 cm. longis, medio 0·1 cm. latis; corollæ lobis usque ad medium in tubum subcylindricum connatis, apicibus liberis 5 oblongis obtusis, sordide carneis, extus glaberrimis, intus tenuissime (subinconspicue) velutinis, 0·2 cm. longis, medio, marginibus subreflexis, 0·1 cm. latis, tubo intus præsertim infra lobos pilis deflexis plus minus dense tecto; gynostegio illo *A. neglecti* Schltr. simili, tamen graciliore; antheris oblongis, marginibus cartilagineis basin versus ampliatis loculos superantibus, appendice hyalino ovato-oblongo obtuso parvulo, stigmatis capiti appresso, marginibus loculorum breviter excisis; polliniis subfalcato-oblongis utrinque obtusis, caudiculis divaricatis brevibus crassis, glandulæ rhomboideæ crassæ dimidio inferiore insertis; stigmatis capite conico brevissime bifido, basi 5-angulato.

Inter frutices scandens in ripis fluminis Olifant River, in ditione Clanwilliam, alt. 400 ped., 25 Aug. 1894, *R. Schlechter*.

Of the three South African species of *Astephanus*, the present one may be regarded as the rarest. It was originally described by E. Meyer from specimens collected by Drège near the Paarl, but of late it has never been found again, until a year ago I was lucky enough myself to rediscover it. Its affinity is equally with both, the *A. marginatus* Dcne. and *A. neglectus* Schltr. From these, however, it is easily recognized by the narrow leaves and the 2–3-flowered umbels; from the former it differs besides by the shorter stigma and the very different range of distribution; *A. neglectus* has smaller flowers, with more spreading corolla-lobes, a different gynostegium, and very characteristic pollinia with a remarkably large gland.

33. **Schizoglossum ciliatum** Schltr., n. sp. Species aff. *S. fasciculari* Schltr.; caule erecto simplici vel subsimplici supra medium satis dense foliato, bifariam pilosulo; foliis erectis lineari-lanceolatis vel linearibus, subacutis, inferioribus quam internodia brevioribus, superioribus internodia excedentibus, 1·7–4·7 cm. longis, medio ad 0·7 cm. latis; floribus patentibus in fasciculis extra-axillaribus alternantibus plurifloris, pedicellis gracillimis filiformibus inæquilongis; calycis segmentis lanceolatis acutis pilosis, quam corolla duplo brevioribus; corollæ lobis lanceolato-oblongis obtusis extus pilosis margine tenuiter ciliatis intus glabris, 0·4–0·5 cm. longis, medio 0·2 cm. latis; coronæ foliolis subquadratis apice trilobulatis, lobulis lateralibus dentiformibus lineari-falcatis acutis, intermedio erecto multo longiore lineari-ligulato-acuto, gynostegium longe excedente, intus ligula e basi ovato-lanceolata lineari-attenuata apice in stigma inflexa donatis, antheris oblongis, marginibus cartilagineis basi ampliatis loculos vix æquantibus; appendice hyalino magnitudine antheras æquante permagno oblongo obtuso, marginibus loculorum breviter excisis; polliniis subfalcato-oblongis obtusis, caudiculis divaricatis brevibus filiformibus flexuosis glandula oblonga obtusa basi affixis.

In graminosis prope Howick, alt. 3800 ped., 29 Nov. 1893, *J. M. Wood*, No. 5357.

A slender plant, related to *S. fasciculare* (E. Mey.) Schltr., from which it is distinguished by the much less hairy leaves, which are never verticillate, the long pedicels, the strongly-reflexed, distinctly ciliate corolla-lobes, the different corona-scales, the large membranous appendage of the anthers, and the somewhat different pollinia. According to the collector, the flowers are lilac. This species is only known to me from the above-mentioned locality.

Harvey's figure of *S. fasciculare* (*Thes. Cap.* i. t. 90) gives a pretty good idea of the general appearance of that species, although the details given besides are, as in many cases in this work, incorrect.

34. **Schizoglossum flavum** Schltr., n. sp. Herba erecta, simplex vel subsimplex, 12–20 cm. alta; caule subtereti bifariam piloso satis dense foliato; foliis erectis vel erecto-patentibus, ovatis vel lanceolato-ovatis obtusiusculis basi subhastato-auriculatis vel subcordatis supra scabridis subtus pallidioribus velutino-pilosis, breviter petiolatis, 1·5–4 cm. longis, supra basin 0·8–1·3 cm. latis; calycis segmentis lanceolatis acutis pilosis, 0·4 cm. longis; corollæ lobis erecto-patentibus ovato-oblongis obtusis vix 0·8 cm. longis, medio 0·3 cm. latis; coronæ foliolis tenuibus erecto-patentibus, quam gynostegio longioribus lanceolato-ligulatis acutis basi paulo angustatis, intus medio longitudinaliter lamellis 2 subinconspicuis instructis; antheris pro genere brevibus subquadratis, marginibus cartilagineis basi valde incrassatis rotundatis, loculos æquantibus, appendice hyalino suborbiculari apice obtuso inflexo; polliniis oblique ovalibus, margine interiori basi compressis, cauliculis brevissimis divaricatis, glandula oblonga obtusa supra basin adnatis; floribus in umbellis extra-axillaribus alternantibus plurifloris plus minus longe pedunculatis, folia subæquantibus vel paulo excedentibus; pedunculo pedicellisque brevioribus pilosis.

In lapidosis prope Nottingham Road Station (Nataliæ), alt. 4000–5000 ped., 8 Nov. 1893, *J. M. Wood*, No. 5358. In Natalia (loco speciali haud indicato), *Gerrard & McKen*.

Although agreeing in habit with other species of *Schizoglossum*, I am still in doubt whether this plant really belongs to the genus, as there are several differences which may justify its generic separation. I possess two more species which are doubtless congeneric with our plant, one from East Griqualand, collected by Tyson, the other from the lofty summit of Mont aux Sources, collected by Mr. J. Thode. In all three I note a most singular structure of the pollinia; their form is almost oblique-pyriform, but the inner margin is suddenly thinned, so much so that the pollinia appear there almost transparent. The two lamellæ on the inner side of the corona-scales are hardly visible, and of a very thin texture.

35. **Asclepias** (§ Pachycarpus) **macrochila** Schltr., n. sp. Validus erectus vel adscendens, 20–40 cm. altus; caule subtereti simplici dense foliato; foliis ovatis vel ovato-oblongis acutis scabre puberulis; costa margineque scaberrimis, 3–6·5 cm. longis, infra medium 2–3·5 cm. latis, marginibus subundulatis, petiolo c. 1 cm. longo; floribus in fasciculis extra-axillaribus alternantibus plurifloris, pedicellis patentibus post æstivationem reflexis, pilosis, calycis

segmentis lanceolatis acutis subvillosis, 1·2 cm. longis, supra basin c. 0·5 cm. latis; corolla pro genere maxima depresso-campanulata more *G. grandiflori* Dcne.; lobis ovatis obtusiusculis, ad medium usque connatis, utrinque glabris, 2·4 cm. longis, medio 1·2 cm. latis; coronæ foliolis e basi ligulata in laminam magnam petaloideam sublanceolatam obtusam dilatatis, petala æquantibus, basi utrinque denticulo carnoso instructis; antheris subquadratis basin conspicue dilatatis, marginibus cartilagineis subfalcatis loculos versus paulo excedentibus, appendice hyalino minuto apice rotundato in stigma inflexo, marginibus loculorum profundius excisis; polliniis valde compressis oblique oblongis, caudiculis apicem versus valde dilatatis glandula oblonga obtusa basi affixis.

Besters Vley, prope Witzies Hoek, in terra Orange Free State, alt. 6500 ped., Jan. 1894, *H. G. Flanagan*, No. 2067; *H. Bolus*.

One of the finest species of the *Pachycarpus* section, for which I am indebted to Mr. H. Bolus and Mr. H. G. Flanagan, who discovered it during their recent trip to the Mont aux Sources, near Besters Vley, in the Orange Free State. As in many other species of the genus, the length and width of the middle lobe of the corona-scales is somewhat variable, being sometimes shorter than the corolla, or equalling it, sometimes longer. The colour of the flowers seems to be about as in *Gomphocarpus grandiflorus* Dcne., but the different corona brings our plant nearer to *G. concolor* Dcne. and *G. Schinzianus* Schltr. (in *Engl. Jahrb.* ined.).

36. **Asclepias mashonensis** Schltr., n. sp. Herba erecta, simplex, gracillima, c. 40 cm. alta; caule tereti basi glabrescente apicem versus bifariam puberulo, supra medium distanter foliato, basi subnudo; foliis patentibus anguste linearibus acutis, marginibus sæpius revolutis, 7–9 cm. longis, internodia subæquantibus vel paulo superantibus; floribus speciosis in umbellis subextra axillaribus alternantibus pauci-(3–4)floris, folia haud æquantibus; calycis segmentis lanceolatis acutissimis, glabris, quam corolla multo brevioribus, 0·2 cm. longis; corollæ lobis erecto-patentibus ovato- vel obovato-oblongis obtusissimis, quam gynostegium duplo longioribus, 1·3 cm. longis, medio 0·7 cm. latis; coronæ foliolis erectis submembranaceis, circuitu obovatis, concavis apice acuminata inflexis, gynostegium æquantibus; antheris oblongis, marginibus cartilagineis basi vix ampliatis, subfalcatis, loculos vix æquantibus, appendice hyalino transverso late ovato obtusissimo, apice in stigma inflexo, marginibus loculorum altius rotundato-excisis; polliniis paulo compressis oblique falcato-oblongis obtusis apice paulo angustatis, caudiculis divaricatis filiformibus, pollinia longitudine æquantibus, basi conspicue dilatata, glandula brevi rhomboidea infra medium adnatis.

Fort Salisbury, in terra Mashonaland appellata, anno 1893, *J. F. Folliott-Darling*.

This is the first Asclepiad known to me from the vast country lying between the Limpopo and the Zambesi, as yet totally unexplored. It is a very pretty plant, with the slender habit of *G. truncatus* and *G. expansus*, but differing from all the described species in the structure of the corona. The flowers are dark

purple; the corona, which is rather membranous for the genus, is white. The pollinia are a little compressed, but not so much as is usually the case in *Gomphocarpus*. The umbels appear to be generally three-flowered. I have to thank Mr. J. R. Sim for the only specimen I have seen of this species.

37. **Asclepias pseudo-crispa** Schltr., n. sp. Herba erecta, scabra, e basi ramosa, 15–20 cm. alta; ramis subteretibus bifariam puberulis satis dense foliatis; foliis lineari-oblongis linearibusve obtusiusculis, supra sparsim pilosulis, subtus glabrescentibus, marginibus interdum reflexis, 2–3·5 cm. longis, medio 0·4–0·6 cm. longis; floribus in umbellis terminalibus multifloris erectis, pedunculo bifariam piloso, tereti, folia paulo excedente, pedicellis gracilibus filiformibus pilosis, subæquilongis (1–1·5 cm. longis); calycis segmentis lanceolatis acutis pilosis, quam corolla subduplo brevioribus; corollæ lobis reflexis ovatis obtusis, margine tenuiter ciliatis; coronæ foliolis gynostegium paulo excedentibus breviter unguiculatis, lamina cucullata obtusa, margine utrinque medio in dentem linearem porrectum productis; antheris oblongis, marginibus cartilagineis alæformibus, loculos æquantibus, appendice hyalino transverso apice inflexo emarginato, marginibus loculorum alte excisis; polliniis oblique pyriformibus paulo compressis, basi attenuatis, caudiculis divaricatis brevissimis, glandula oblonga basi affixis.

In collibus prope King Williamstown (Kaffrariæ), alt. 1400 ped., Dec. 1893, *J. R. Sim*, No. 1633. Loco incerto, probabiliter in Transvaalia, *Mrs. Saunders* (*J. M. Wood*, No. 5380 in Herb. Schltr.).

One of the many allies of *G. crispus* R. Br., from which it is easily distinguished by the narrow straight leaves and conspicuously smaller flowers, besides several other differences mentioned in the diagnosis. The flowers seem to be brownish. The locality of Mrs. Saunders's specimen, which Mr. J. M. Wood kindly forwarded to me, is unknown; Mr. Wood suggests that it may have been collected in the Transvaal, but this is as yet doubtful.

38. ASCLEPIAS RIGIDA Schltr. (*Gomphocarpus rigidus* Dcne.). Herba valida, erecta, simplex; caule subtereti scabro dense foliato; foliis erecto-patentibus ovatis vel ovato-ellipticis undulatis, apice subacutis scabre pilosulis, præsertim costa margineque, 3–6 cm. longis, supra basin 2–3·5 cm. latis, pedunculo brevissimo; floribus in umbellis extra-axillaribus alternantibus subquadrifloris, folia haud æquantibus, pedunculo pedicellos æquantibus bifariam puberulo, pedicellis pilosis, 0·7 cm. longis; calycis segmentis lanceolatis acutis pilosis, vix 1 cm. longis, infra medium 0·4 cm. latis; corollæ subcampanulatæ lobis ovatis obtusis glabris, marginibus apice sæpius subreflexis, calycis segmenta paulo excedentibus; coronæ foliolis depressis, e basi lineari-cuneata in laminam concavam rotundatam obscure 5-lobatam dilatatis; antherarum oblongarum marginibus cartilagineis basi oblique truncatis, loculis subæquilongis, appendice hyalino ovato obtusissimo, marginibus loculorum profundius rotundato-emarginatis; polliniis more generis valde compressis oblique oblongis basin versus attenuatis, caudiculis patulis paulo compressis glandula oblonga obtusa supra basin adnatis.

In collibus asperis prope Rietvalley, alt. 5500 ped., *Drège.* Wildschutsberg, *Drège.* In collibus prope Bethlehem, in terra Orange Free State, alt. 5100 ped., Jan. 1894, *H. Bolus*, No. 8116; *H. G. Flanagan.*

This is another of the very interesting plants which were recently collected by Mr. H. Bolus and Mr. H. G. Flanagan during their trip to the Mont aux Sources. It was originally discovered by J. F. Drège, in the Wittebergen, at Riet Valley, and the Wildschutsberg, but had never been found again. The corona-scales are very distinct from those of all the other species of this section, and the plant may well be regarded as one of the great number of forms which prove that *Xysmalobium* cannot be maintained as a genus distinct from *Asclepias.* It cannot even be placed as a distinct section, as many of the forms formerly regarded as *Xysmalobia* are too closely allied to others of the true *Gomphocarpus* to be far removed from them.

39. **Asclepias Tysoniana** Schltr., n. sp. Herba adscendens, e basi ramosa c. 20 cm. alta; ramis subteretibus subvelutinis, satis dense foliatis, foliis ovatis vel ovato-lanceolatis subacutis tenue pilosulis, breviter petiolatis, 2–4·5 cm. longis, infra medium 1–1·5 cm. latis; floribus in umbella terminali multiflora, subcapitata, pedunculo erecto folia excedente, pedicellis brevissimis pilosis; calycis segmentis ovato-lanceolatis acutis pilosis, vix 0·3 cm. longis; corollæ lobis erecto-patentibus rhomboideo-ovatis obtusis, extus apicem versus sparsim pilosis, intus glabris, calycem dimidio excedentibus; coronæ foliolis carnosis, erectis, ovato-oblongis obtusissimis, gynostegium vix excedentibus, intus apice conspicue incrassatis; antheris subquadratis, marginibus cartilagineis basi truncata haud dilatatis, loculos subsuperantibus, appendice hyalino oblongo obtusissimo in stigma depresso, marginibus loculorum breviter emarginatis; polliniis oblique pyriformibus paulo compressis, caudiculis filiformibus divaricatis glandula oblonga obtusa basi insertis.

In clivis montis Malowe (Griqualand orientalis), flor. Dec. (1884), *W. Tyson.* Prope Kokstad (Griqualand orientalis), flor. Dec. (1889), *W. Haygarth* (*J. M. Wood*, No. 4184 in Herb. Schltr.).

In the *Herb. Norm. Aust. Afr.* (ed. H. Bolus et P. MacOwan), I proposed for this plant the name *Pachyacris capensis;* now, however, after having had ample opportunity of studying allied forms, I feel satisfied that it cannot be generically distinguished from *Asclepias.* In *Engl. Jahrb.* I have therefore proposed to unite all these plants under one section, which I call *Pachyacris.* Of the species now published, the present one comes nearest to *G. acerateoides* Schltr. from the Transvaal, but is easily recognized by the leaves and the subcapitate flower-heads. *A. Tysoniana* is described to me as having yellow flowers, which have a very strong agreeable scent. I have dedicated this species to its discoverer, Mr. W. Tyson, who has greatly added to our knowledge of the flora of East Griqualand.

40. **Eustegia macropetala** Schltr., n. sp. Herba pusilla e basi ramosa 7–10 cm. alta; ramis erectis vel suberectis, glabrescentibus,

dense foliatis; foliis erectis, filiformibus acutis glabris, marginibus sæpius revolutis, basi in petiolum brevissimum angustatis, internodia excedentibus, 1·5–3 cm. longis; floribus in umbellis extra-axillaribus alternantibus subquadrifloris, pedunculo brevi tereti bifariam puberulo, pedicellis subæquilongis filiformibus glabrescentibus, 0·8 cm. longis; calycis segmentis ovatis acutis tenuissime puberulis 0·2 cm. longis; corollæ lobis erecto-patentibus ovato-oblongis obtusis glabris, 0·7 cm. longis, medio vix 0·4 cm. latis; coronæ foliolis 5 exterioribus linearibus obtusis, intus longitudinaliter carina incrassata instructis, foliolis intermediis 5, paulo longioribus, alte tripartitis, partitionibus lateralibus linearibus subfalcatis obtusis, margine exteriore infra medium in lobum rotundatum ampliatis, partitione intermedia suberecta lineari obtusiuscula, foliolis intimis 5 lineari-lanceolatis apice attenuatis subincurvis, antheras paulo excedentibus; antheris subquadratis brevissimis, marginibus cartilagineis angustioribus, loculos duplo excedentibus, appendice hyalino oblongo obtuso apice subincurvo, marginibus loculorum incrassatis brevissime emarginatis; polliniis compressis oblongo-falcatis obtusis, caudiculis adscendentibus subfiliformibus quam polliniis brevioribus, subito deflexis incrassatis, glandula oblonga obtusa.

In arenosis ad pedem montis Piquetberg, alt. 1000 ped., 6 Sept. 1894, *R. Schlechter*, No. 5213.

This is one of the most distinct species known to me of this highly interesting genus, which is confined to the south-western corner of the Cape Colony. Including *E. plicata* Schinz, there are five known species: some of these seem to be not really distinct; but this is a question which cannot be settled without careful examination of E. Meyer's and R. Brown's types. During my last journey along the west coast of the southern part of the Cape Colony I have therefore collected as much material as possible of all the species, and hope to be able, with the aid of these, to work out the genus properly.

MERIONETHSHIRE PLANTS.

By the Rev. W. R. Linton, M.A.

The plants recorded in the following list were found in three different districts of Merionethshire, where I spent a few days in August; *viz.*, at Corwen, at Rhydymaen and Drwsynant, from four to six miles from Dolgelly on the Bala road, and about Llanfair, two miles S. of Harlech, on the coast. The new records do not appear in *Top. Bot.*, 2nd ed., nor in the *Journal of Botany* from 1883 to 1894 inclusive. One record from Festiniog belonging to the year 1892 is also inserted. I am indebted to the Rev. W. Moyle Rogers for kindly looking over the Rubi, and corroborating or correcting my naming of them. The list of records follows the *Lond. Cat.*, ed. 9, in order and nomenclature, and localities are given in the succeeding notes.

Ranunculus peltatus Fr.
Fumaria pallidiflora Jord.
Ononis repens b. *horrida* Lange.
Melilotus alba Desv.
Prunus Cerasus L.
Rubus affinis b. *Briggsianus* Rogers.
R. nemoralis c. *Silurum* A. Ley.
R. pulcherrimus Neum.
R. hirtifolius Muell. & Wirtg.
R. curvidens A. Ley.
R. Borreri Bell-Salt.
R. rosaceus b. *hystrix* (W. & N.).
R. rosaceus c. *silvestris* R. P. Murr.
R. Koehleri b. *pallidus* Bab.
R. Marshalli Focke & Rogers.
R. dumetorum a. *ferox* Weihe.
Alchemilla vulgaris b. *alpestris* (Schmidt).
Myriophyllum alterniflorum DC.
Gnaphalium sylvaticum L.
Arctium nemorosum Lej.
Hieracium lapponicum Fr.
H. rigidum b. *pullatum* Dahlst.
Utricularia minor L.
Mentha rubra Sm.
Lycopus europæus L.
Atriplex hastata L.
Salix aurita × *repens* (*ambigua* Ehrh.).
S. Caprea × *viminalis* Wimm.
Sparganium simplex Huds.
Potamogeton pusillus L.
P. interruptus Kit.
Carex lævigata Sm.
C. extensa Good.
C. rostrata Stokes.
Poa compressa L.

The notes following comprise several new locality records:—

Ranunculus peltatus Schrank. Plentiful in R. Dee at Corwen.—*R. Lenormandi* F. Schultz. Llanfair.—*R. hederaceus* L. Llanfair.

Neckeria claviculata N. E. Br. Bryncoedifor, near Drwsynant.

Fumaria pallidiflora Jord. Corwen; Llanfair, near the seashore.

Lepidium hirtum Sm. Llanbedr.—*Cakile maritima* Scop. Llanfair, Llandanwg.

Viola lutea Huds. Drwsynant.

Hypericum Androsæmum L. Drwsynant.—*H. elodes* L. Rhydymaen, in a swampy wood; Llanfair.

Tilia cordata Mill. Bryncoedifor, near Drwsynant.

Radiola linoides Roth. Moechras. — *Linum catharticum* L. Stunted form, Moechras.

Geranium Robertianum L. White-flowered form, Corwen.

Ononis repens b. *horrida* Lange. Abundant among the sand dunes by Moechras. Only the older plants produced spines. See *Bot. Exch. Club Rep.* 1882, 66–7, and 1889, 245.

Melilotus alba Desv. A casual at Drwsynant Station.—*Trifolium fragiferum* L. On flats near Moechras. — *Lathyrus sylvestris* L. Railway bank below Llanfair. — *L. montana* b. *tenuifolius* Reich. fil. Cwm Bychan, and by the Afon Artro, above Llanbedr.

Prunus Cerasus L. Llanfair; Llanbedr; Bryncoedifor, near Drwsynant. — *Spiræa salicifolia* L. Abundant about Drwsynant; no doubt an escape originally.

Rubus fissus Lindl. Rhydymaen; Drwsynant. Also an intermediate form between *R. fissus* and *R. plicatus*, on rocky slopes one mile N.E. of Drwsynant Station. — *R. plicatus* W. & N. A form with exceptionally long stamens at Drwsynant and Rhydymaen. The type occurred in a wood S.E. of Llanfair. — *R. plicatus* var. A form with curious narrow-oval leaflets and small-based prickles at Benglog, Rhydymaen, and Drwsynant. — *R. nitidus* W. & N., form. "I think a *nitidus* f.," *W. M. R.* Llanfair. — *R. affinis* b. *Briggsianus* Rogers. One of the most frequent brambles in the neighbourhood of Llanfair and Llanbedr.—*R. incurvatus* Bab. Common.—*R. Lindleianus* Lees. Corwen; Llanfair; Llanbedr.—*R. rhamnifolius* W. & N. Llanbedr; only seen once.—*R. nemoralis* c. *Silurum* A. Ley. By the Afon Artro, above Llanbedr. "Looking rather intermediate between *Silurum* and *hirtifolius*," *W. M. R.* Rhydymaen. — *R. pulcherrimus* Neum. Corwen; Llanbedr. A variety occurred by the Afon Artro, above Llanbedr, on which Mr. Rogers remarks that it "makes some approach towards *Silurum*."—*R. villicaulis* b. *Selmeri* (Lindeb.). Corwen.—*R. gratus* Focke (*fide* W. M. R.). On a common about a mile S.E. of Llanbedr. — *R. rusticanus* Merc. Very abundant in hedges near sea-level about Llanfair and Llanbedr, but not seen inland, where the altitude rises rapidly to several hundred feet.—*R. macrophyllus* W. & N. Between Llanfair and Llanbedr. — Var. *Schlectendalii* (Weihe). Ib. — *R. Sprengelii* Weihe. Rocky slope one mile N.E. of Drwsynant Station; scarce. — *R. hirtifolius* Muell. & Wirtg. Corwen and Rhydymaen. "With somewhat mixed armature and peculiar leaf-toothing, but apparently *hirtifolius*," *W. M. R.* Bryncoedifor, near Drwsynant, "*hirtifolius* f.," *W. M. R.* Llanfair. "Best under *hirtifolius*," *W. M. R.*—*R. pyramidalis* Kalt. Corwen; Llanfair.—*R. leucostachys* Schleich. Llanfair.—*R. curvidens* A. Ley. Frequent about Llanfair and Llanbedr, mostly in hedges. Two out of several gatherings were submitted to Mr. Rogers, who considers them to be this species, though varying slightly from the type in being less hairy, and the terminal leaflet with sides less markedly parallel.—*R. mucronatus* Blox. By the Afon Artro, above Llanbedr; scarce. — *R. Borreri* Bell-Salt. On rocky slopes one mile N.E. from Drwsynant Station. "The true *R. Borreri* Bell-Salt., but less glandular than is usual in the south; a form varying very slightly towards var. *dentatifolius*," *W. M. R.* Cwm Bychan. Another plant from Rhydymaen and towards Aran Mawddwy Mr. Rogers considers "a good deal like *Borreri*, but seemingly a distinct form nearer the *Radulæ*." — *R. podophyllus* P. J. Muell. Cwm Bychan; by the Afon Artro. — *R. rosaceus* b. *hystrix* (W. & N.). Corwen; Llanfair. — c. *silvestris* R. P. Murr. Rhydymaen. — *R. Koehleri* b. *pallidus* Bab. Corwen; Llanfair. — *R. Marshalli* Focke & Rogers. Rhydymaen and towards Aran Mawddwy. A strong form, differing in several respects from the Midland plant, and which will probably receive a varietal name.—*R. dumetorum* a. *ferox* Weihe. Corwen.—*R. corylifolius* Sm. Llanfair.—*R. affinis* × ? *incurvatus*. Llanfair. Suggested by Mr. Rogers for a hybrid plant which was growing with these two brambles, the *affinis* being the var. *Briggsianus*.

Potentilla procumbens Sibth. Llanbedr. — *Alchemilla vulgaris* b. *alpestris* (Schmidt). Drwsynant.

Cotyledon Umbilicus L. Llanfair.

Drosera rotundifolia L. Rhydymaen.

Myriophyllum alterniflorum DC. Ditch near the Dee, Corwen.—*Callitriche hamulata* Kuetz. Llanfair.

Epilobium obscurum Schreb. Rhydymaen; Llanfair.

Eryngium maritimum L. Llanfair. — *Œnanthe crocata* L. Frequent about Drwsynant and Rhydymaen; Llanfair.

Gnaphalium sylvaticum L. Drwsynant; Llanbedr. Only a plant or two seen in each locality.

Carlina vulgaris L. Cwm Bychan, near Llanfair.

Arctium nemorosum Lej. Corwen; Rhydymaen; frequent along the road with the next.—*A. minus* Bernh. Rhydymaen.—*Serratula tinctoria* L. Abundant about Drwsynant; Llanfair.

Centaurea nigra L. The form with rayed flowers was abundant about Cwm Bychan, alt. 600 ft.

Hieracium diaphanum b. *stenolepis* Lindeb. Several plants in the old slate-quarries at Llanfair. — *H. lapponicum* Fr. A few plants on rocks by the Roman steps; Cwm Bychan, near Llanfair. — *H. rigidum* b. *pullatum* Dahlst. Occurs on rocky ground near Blaenau Festiniog Station. Collected in 1892.—g. *tridentatum* (Fr.). Bryncoedifor, Drwsynant. — *H. boreale* Fr. Abundant at Rhydymaen and Drwsynant; Llanfair; by the Afon Artro, above Llanbedr.—*H. umbellatum*. Near Cwm Bychan; Llanbedr. — *Lactuca muralis* Fresen. With white flowers at Corwen. The ordinary form also occurred there.

Anagallis tenella L. Wet turf near Llanbedr.

Samolus Valerandi L. Llanfair.—*Erythræa littoralis* Fr. Llandanwg.—*Menyanthes trifoliata* L. Above Llanfair.

Verbascum Thapsus L. Llanfair. — *Bartsia Odontites* b. *serotina* (Reichb.). Llanfair.

Orobanche major L. Among furze at Argoed, Llanfair.

Utricularia minor L. Near the stream below Tyddyn Rhyddyd, Llanfair.

Mentha piperita L. Argoed, Llanfair. — *M. rubra* Sm. By the stream about one mile E. of Llanfair. — *Lycopus europæus* L. Llanfair.

Calamintha Clinopodium Spenn. Llanbedr.

Scutellaria minor Huds. Cwm Bychan, and by the Afon Artro. — *Stachys arvensis* L. Drwsynant. — *Galeopsis versicolor* Curt. Rhydymaen.

Atriplex hastata L. Near Drwsynant Station. — *A. Babingtonii* Woods. Llandanwg.—*Salsola Kali* L. Llandanwg.

Polygonum Convolvulus b. *subalatum* V. Hall. Bryncoedifor, near Drwsynant. — *P. Raii* Bab. Sandy shore near Llandanwg; scarce.

Euphorbia Paralias L. Among the sand dunes near Moechras.

Salix aurita × *repens* (*S. ambigua* Ehrh.). One plant in wet woodland about a mile and a half E. of Llanfair. — *S. Caprea* × *viminalis* (*S. rugosa* Leefe). Llandanwg; Llanbedr.

Juncus Gerardi Loisel. Salt-marsh near Moechras. — *J. maritimus* Lam. Near Moechras.

Sparganium simplex Huds. In the stream a mile E. of Llanfair.

Potamogeton polygonifolius Pour. Ditches E. of Llanfair. — *P. pusillus* L. Llanfair. — *P. interruptus* Kit. Brackish ditches and pool below Llanbedr Station.

Scirpus cernuus Vahl. Llanbedr; flats near Moechras. — *S. Tabernæmontani* Gmel. Salt-marsh near Moechras. — *S. rufus* Schrad. Ib.

Rhyncospora alba Vahl. Near Cwm Bychan.

Carex remota L. Rhydymaen. — *C. pallescens* L. Rhydymaen. *C. lævigata* Sm. Rhydymaen; Drwsynant. — *C. distans* L. Salt-marsh by Moechras. — *C. Hornschuchiana* Bab. Rhydymaen.— *C. extensa* Good. Salt-marsh by Moechras. — *C. flava* L. Rhydymaen.—*C. rostrata* Stokes. E. of Llanfair.

Milium effusum L. Woods N.E. side of Llanbedr. — *Poa compressa* L. Walls, Corwen.

Agropyron junceum Beauv. Llandanwg.

Lomaria Spicant Desv. A plant with fronds branching above seen at rocks one mile N.E. of Drwsynant Station. — *Asplenium Adiantum-nigrum* L. Cwm Bychan; Llanbedr. — *A. Trichomanes* L. Common at Rhydymaen.

Lastræa Oreopteris Presl. Drwsynant.

Equisetum sylvaticum L. Rhydymaen.

Lycopodium Selago L. and *L. alpinum* L. On Aran Mawddwy.

Selaginella selaginoides Gray. Plentiful on Aran Mawddwy.

AN ACCOUNT OF THE GENUS ARGEMONE.

By D. Prain.

(Concluded from p. 333.)

5. Argemone intermedia Sweet. Glabra glaucescens, ramis ascendentibus vel erectis gracilibus undique sparse foliosis cauleque inermibus vel aculeis patentibus armatis; foliis herbaceis sinuatis margine cnicoideo-spinosis, venis albidis; floribus inter bracteas 1–2 versus apicem ramorum plus minus elongatorum (var. *typica*) vel perbrevium (var. *stenopetala*) dispositas singulis terminalibus; sepalis sub apicem in cornu crasse coriaceum pyramidale læve vel aculeis perpaucis obsitum (var. *typica*) vel teretiforme læve (var. *stenopetala*) productis; petalis albis vel raro albo-roseis oblongis basi angustatis apice (var. *typica*) truncatis vel rarissime rotundatis, vel (var. *stenopetala*) acutis; capsula late fusiformi 4-valvis, stylo distincto; valvis tenuibus reticulatis aculeis subæqualibus, vel medianis plus minus crassioribus, basi vix dilatatis obsitis; seminibus globosis minoribus distincte reticulatis.

Var. *typica:* floribus sæpissime magnis vel majusculis, petalis apice truncatis vel rarissime rotundatis, sepalorum cornubus latis coriaceis, ramis floralibus elongatis. *Argemone alba* James, *Long's Exped.* ii. 149 (1823) [nomen prius sed præoccupatum]. *A. intermedia* Sweet, *Hort. Brit.* ed. 2, 585 (1830). *A. corymbosa* Greene? *Bull. Calif. Acad.* ii. 59 (1886). *A. mexicana* James, *Am. Phil. Soc. Trans.* ii. 183 (1825); Torrey in Emory, *Rep.* 406 (1848); Engelm. *Wislizen. Rep.* 112, in parte (1848); Torrey & Gray, *Pac. R. Rep.* iii. 159 (1855); Torrey, *Mex. Bound. Rep.* 31, omnino!

(1858); Porter, *Flor. Colorad.* 6 (1874); Britt. *Bull. Torrey Bot. Cl.* ix. 156 (1882); Kerber, *Sitzungsber. Bot. Ver. Brand.* xxiv. 35 (1882); Coulter, *Contrib. U. S. Nat. Herbm.* ii. 12, quoad plantam albifloram (1891), nec Linn. *A. mexicana* var. *albiflora* Torrey, *Ann. Lyc. N. Y.* ii. 166 (1828); Eaton & Wright, *N. Amer. Bot.* 134 (1840); Torrey in *Frem. Rep.* 87 (1845), et Marcy, *Rep.* 280 (1853); Torrey & Gray, *Pac. R. Rep.* ii. 125 (1854); Torrey, *Pac. R. Rep.* iv. 64 (1856); Gray, *Pac. R. Rep.* xii. 40 (1860); Kuntze, *Rev.* i. 13, syn. *A. hispida* exclus. (1891), nec DC. *A. Barclaiana* Loud. *Hort. Brit.* ed. 2, Suppl. 472 (1850), nec *A. Barclayana* Penny. *A. hispida* Gray & Hook. *Veg. Rocky Mts.* 26; Hook. f. *Bot. Mag.* t. 6402 (1878), vix A. Gray. *A. platyceras* var., S. Wats. *Proc. Am. Acad.* xviii. 318 (1882). *A. platyceras* Oyster, *Bull. Torrey Bot. Cl.* xiv. 233 (1887), et xv. 214 (1888); Webber, *Amer. Natur.* xxiii. 633 (1889); Wats. & Coult. in Gray, *Manual*, ed. 6 59 (1890); Rydberg, *Amer. Natur.* xxv. 486 (1891). *A. albiflora* S. Wats. *Proc. Amer. Acad.* xxiv. 38 (1889), nec Hornem. *A. platyceras* var. *rosea* Coult. *Contrib. U. S. Herb.* i. 30, quoad Palmer n. 20 tantum (1891).

America: Nebraska; ad fl. Platte, *Cooke in Herb. Carey*! *Jones*, n. 218! Kansas, ad fl. Purgatoire, *Bell*, n. 144! Texas, *Wallace in Herb. Durand*! *Reverchon*, n. 24! Nova Mexico; Organ Mts., *Vasey*, n. 12! Mexico borealis; ad. fl. Rio Grande, *Schott* (Mex. Bound. Comm.), n. 23! inter Lareda et Bejar, *Berlandier*! Parras, *Palmer*, n. 20 (spp. floribus roseo suffusis)! California inferiore; apud Muleje, *Palmer*, n. 7 (spp. *parviflora*)!

Var. *stenopetala:* floribus parvis subsessilibus, petalis anguste lanceolatis acutis, sepalorum cornubus angustatis teretiformibus. *Argemone platyceras* Pringle, *Pl. Mex. exs.* n. 43 (1885), haudquaquam Link & Otto.

America: Mexico; Chilhuahua, *Pringle*, n. 43! (v. etiam sp. in *Hort. Cosson* cult.).

Herbacea gracilis, annua vel biennis, 30–90 cm. alta, ramis floriferis in var. *typica* 4–10 cm. longis, in var. *stenopetala* brevissimis; foliis 8–20 cm. longis, 2·0–4 cm. latis; sepalis 2·5 cm. longis, cornubus 6–8 mm. longis; alabastris 1 cm. latis, floribus in var. *typica* 6–8 cm., in var. *stenopetala* 2·5 cm. tantum latis; capsula 3–3·5 cm. longa, 1·5–2 cm. lata, stylo 2–4 mm. longo, seminibus 2 mm. latis.

This is, without doubt, the most troublesome of the white-flowered forms of *Argemone* to localise. As its bibliography shows, American botanists have usually placed it, when it comes from Texas or Mexico, in *A. mexicana*, but have been fairly evenly divided in their opinions, when they have received it from the prairies, as to whether it should be associated with *A. alba* or with *A. platyceras*. It does not, however, admit readily of association with either of these species, unless—and there is much to be said in favour of the view—it is looked upon as only a variety of a comprehensive white-flowered species that shall include *A. alba* and *A. platyceras* alike. The settlement of this question must be left to botanists in America, who have ample opportunities of deciding the

point. In the meanwhile it seems better to keep it apart as a species than to merge it in either of the others mentioned. From *A. alba* especially, with which it practically agrees in fruit, it differs in having the bracts close under the flowers, as in *A. mexicana* or in *A. platyceras*. In var. *typica* the calyx, except for the comparative absence of armature and total want of hispidity, is much like that of *A. platyceras* var. *hispida;* in. var. *stenopetala*, on the other hand, the sepals are exactly like those of *A. mexicana*, of which it has, moreover, all the habit, though it has a very different fruit. Indeed, we have here again an instance of a plant which, had it been European, would undoubtedly have received specific rank; it is only from a desire not to increase unduly, in the absence of a more extensive suite of specimens, the already somewhat unmanageable list of proposed species, that it is denied the rank here. M. Cosson, on receiving specimens of the plant from Mr. Pringle, sowed some of the seeds; the plants reared by him are in his herbarium at Paris, and they show that the plant under cultivation retains all its distinctive characters; the petals particularly are the same small narrowly lanceolate organs that we find them to be in Pringle's original specimens.

From typical *A. platyceras*, with which the typical *intermedia* best agrees, it differs in being much less aculeate; this, however, is only a relative character, and, though it readily admits of the separation of the plants in the herbarium, does not necessarily carry any great weight. The essential difference is in the fruit, which, like that of *A. alba*, has thin brittle valves very sparingly armed, instead of having hard, subligneous, very densely aculeate valves, as in *A. platyceras*.

This is the plant characteristic of the prairies and the "sand-draws" of Nebraska, Kansas, and Texas; its area, however, curves south-westward through New Mexico and Northern Mexico to Lower California. In the last-named locality it assumes a small-flowered condition parallel to the alteration that occurs in the same region in *A. ochroleuca*. And, if I am right in referring here *A. corymbosa* Greene, this small-flowered state extends northwards into the Mohave Desert. But there are no specimens of *A. corymbosa* in Europe, and the original description is so inadequate that it might apply equally to forms of *A. alba*, *A. intermedia*, or *A. platyceras*, no character being given that serves to diagnose it from any of these. But as Mr. Greene's excellent account in the *Flora Franciscana* of the Californian plant that is not separable from typical *A. platyceras* shows that he is thoroughly familiar with it, and as he has not reduced his own *A. corymbosa* to that species, it seems clear, in spite of some strictures by Mr. Brandegee on the subject, that Mr. Greene's plant cannot with justice be reduced to *A. platyceras*. The presumption which phytogeographical considerations afford is altogether against its being a form of *A. alba;* and, though the point will remain uncertain till Mr. Greene's *A. corymbosa* is fully described, it seems probable that it will require to be referred to *A. intermedia*, more especially since the form of this species identified by Mr. Watson as *A. albiflora* (Palmer, n. 7, which differs greatly, however, from the true *A. alba* in the form of its sepals and buds) has also small flowers.

The name here adopted for the species is not the oldest, since this is the *A. alba* of James. As, however, that name is preoccupied for the South-eastern United States plant, we must employ the next in point of age. There is an apparent dubiety as regards this name, owing to its having been erroneously reduced by Loudon to *A. Barclayana*, which is a form of *A. ochroleuca.* A reference to the original description of *A. Barclayana* shows, however, that it had yellow flowers, and the specimen at Kew named *A. Barclayana* has flowers of that colour. Sweet's plant, as the reference to that name shows, had white flowers. We find, therefore, that Loudon was making the reduction which, under another name, has recently been made by Coulter; this treatment is parallel to that of the older European authors in the case of *A. mexicana* proper; just as Lamarck and DeCandolle united, from similarity of habit and in despite of differences in the flowers and fruit, *A. mexicana* and *A. alba*, so Loudon and Coulter, from the same consideration and in despite of corresponding differences, have united the two forms that really are *A. ochroleuca* and *A. intermedia.*

The species was introduced to Europe from Mexico in 1829 or 1830; its cultivation did not, however, continue. It was again introduced in 1878, and appears to have again been lost; curiously, the specimens which formed the basis of *Bot. Mag.* t. 6402, have not been preserved at Kew. That figure, however, and a garden specimen in Herb. Hale, grown at Larepe, in Wisconsin, show that the typical *A. intermedia* remains as true, under cultivation, to its characters in a wild state as do the other forms of *Argemone.* There are also specimens from Illinois in "Herb. Cosson," which I assume to be garden ones; I have therefore not cited Illinois among the localities in which the species is wild. If they be garden examples, they also show that the plant does not differ under cultivation from the form it assumes in the prairies further west. If the species is wild in Illinois, I cannot find any testimony to this effect in the writings of any American botanist.

It has to be pointed out to the objection which will be raised as to the reference here of *A. platyceras* of Watson and Coulter in the sixth edition of Gray's *Manual*, that the citation is deliberately made, in spite of the fact that their *description* applies *only* to *A. platyceras* var. *hispida* among the white-flowered forms of *Argemone;* the area covered by their work extends westward only to the 100th meridian; no specimens of the plant they describe from the east of that line have yet reached Europe; the plant reported from the area they indicate is the one described above; whatever its true position may be, the description given in the *Manual* will therefore have to be recast; it is certainly not *A. hispida.* What the white-flowered plant included by them under *A. mexicana* may be it is impossible to say; its existence at all is unsupported by any specimens in London, Paris, or Geneva.

6. Argemone platyceras Link & Otto. Aculeatissima, foliis glaucescentibus, ramis suberectis cauleque undique densius foliosis

aculeis majusculis sæpissime numerosis retropatentibus undique munitis; foliis herbaceis sinuato-pinnatifidis nervis subtus aculeatis, margine cnicoideo-spinosis, floribus inter bracteas 2–3 foliaceas, versus apicem ramorum aggregatas terminalibus vel in cymis paucifloris dispositis; sepalis majusculis sub apicem in cornu latum extus aculeis obsitum productis; petalis magnis albis vel raro purpureis; capsulis cylindrico-ovatis 3–4-valvis, stylo brevi, valvis coriaceis extus dense aculeatis; seminibus globosis distincte reticulatis.

α. Var. *typica:* alabastris globosis sepalorum cornubus late triangularibus densissime aculeatis, petalis apice truncatis; planta glabra. *Argemone platyceras* Link & Otto, *Ic. Sel.* ii. 85, t. 43 (1827); Otto & Dietr. *Allgem. Gartenzeit.* i. 300 (1833); Coult. *Contrib. U. S. Nat. Herb.* ii. 12 in parte, syn. *A. hispida* exclus. (1891); Colv. *Contrib. U. S. Nat. Herb.* iv. 59 (1893). *A. alba* Raf. *Flor. Ludov.* 83 (1817) [nomen prius sed præoccupatum]. *A. hispida* Brew. & Wats. *Bot. Calif.* i. 21 (1876); Hemsl. *Biol. Cent. Amer. Bot.* i. 27 (1879), vix A. Gray. *A. platyceras* var. *rosea* Coult. *Contrib. U. S. Nat. Herb.* i. 30 (1890), Palmer n. 20 exclus. *A. munita* Greene, *Flor. Francisc.* 281 (1892), vix Dur. & Hilg. *A. mexicana* var. *hispida* Torrey, *Mex. Bound.* 21 (1856), vix *A. hispida* Gray. *A. mexicana* Engelm. in Wisliz. *Rep.* 87 (1848); Prantl & Kundig in Engler, *Nat. Pflanz.* iii. pt. 2, 135, fig. 83 B (1889), haudquaquam Linn. [*A. mexicana* var. *aculeatissima* Moricand MSS. *Chicalotl* Hernand. *Hist.* 215, quoad plant. floribus candicantibus (1651).]

America: Mexico; prope Vera Cruz, *Violet d'Aoust*!; prope oppidum Mexico, *Schaffner*, n. 19! *Mehedin*! *Andrieux*, n. 13! San Angel, prope Mexico, *Bourgeau*, n. 7!; prope Tampico, *Andrieux*, n. 539!; inter Tampico et Real del Monte, *Berlandier*, n. 355! n. 594!; apud Real del Monte, *Galeotti*, n. 4770! San Luis Potosi, *Violet d'Aoust*, n. 547! Saltillo, *Palmer*, n. 19! California inferiore ad La Grulla, *Orcutt*, n. 5! United States; Texas, prope New Braunfels, *Trecul*, n. 1193!; inter fl. Brazos et Colorado, *Drummond*, n. 9! (spp. Trecul et Drummond spinis ramosis!). N. Mexico, *Fendler*, n. 16 (quoad spp. fructigera partim)! Corpus Christi (spp. floribus purpureis), *Nealley*! Arizona, apud Tucson, *Parish*, n. 13! *Pringle*!; apud Huachucha, *Lemmon*, n. 2630! California, in montibus Sn. Bernardino, *Parish*, n. 138!; San Diego, *Palmer*, n. 10 a! *Cleveland*!

β. Var. *hispida:* alabastris globosis, sepalorum cornubus triangularibus densissime aculeatis; petalis apice rotundatis; planta hispida. *Argemone hispida* A. Gray, *Plant. Fendl.* 5, spp. fructigera spinis ramosis exclus. (1845); Walp. *Ann.* ii. 25 (1851); Torrey, *Stainsb. Rep.* 383 (1852); Torrey, *Pac. R. Rep.* vii. 7 (1856); Durand, *Flor. Utah*, 158 (1860). *A. munita* Dur. & Hilg. *Pl. Heerm. in Journ. Acad. Phil.* ser. 2, iii. 37 (1855), et *Pac. R. Rep.* v. 5, t. 1 (1856); Walp. *Ann.* iv. 170 (1857), et vii. 85 (1868). *A. mexicana* Torrey, *Pac. R. Rep.* v. 359 (1857); Anderson, *Cat. Fl. Nevad.* 117 (1870); Porter, *Hayd. Rep. Geol.* 1870, 473 (1871), nec Linn. *A. mexicana* var. *hispida* Porter, *Hayd. Rep. Geol.* 1872, 759 (1873). *A. platyceras* Coult. *Bot. Rocky Mts.* 13 (1885); *Contrib. U. S. Nat. Herb.* ii. 12, quoad syn. *A. hispida* (1891), vix Link & Otto. *A. mexicana β. albiflora* var. *hispida* O. Kuntze, *Rev.* i. 13 (1891).

America: United States; California orientalis (in ditione naturali, "Great Basin" nuncupat.), Williamson's Pass, *Heermann in Herb. Durand*! Mono Pass, *Lemmon*! Nevada, *Herb. Cosson*! Utah, *Jones*, n. 1605! Wyoming, apud Cheyenne, *McLean*! Colorado, prope Arkansas City, *Cusack*! *Bell*! *Hooker & Gray*!; "In the plains," *Vasey*, n. 205! Nova Mexico, *Fendler*, n. 16 (spp. florifera)! *Kern in Herb. Durand*! *Bell*, n. 143! *Rothrock*, n. 75!

γ. Var. *chilensis:* alabastris oblongis, sepalorum cornubus anguste triangularibus sparsius aculeatis; petalis apice rotundatis; planta glabra vel rarissime hispida. *Argemone rosea* Hook. *Bot. Misc.* ii. 207 (1830); Walp. *Rep.* i. 110 (1842); C. Gay, *Flor. Chilen.* i. 100 (1845). *A. Hunnemannii* Otto & Dietr. *Allgem. Gartenzeit.* 298 (1833); Walp. *Rep.* i. 110 (1842); C. Gay, *Flor. Chilen.* i. 101 (1845); Prantl & Kundig in Engl. *Nat. Pflanzenf.* iii. pt. 2, 141 (1889). *A. mexicana* C. Gay, *Flor. Chilen.* i. 110; var. β. tantum exclus. (1845), haudquaquam Linn.

America: Chili; Arqueros, prope Coquimbo (sp. hispidum typ. *A. roseæ*), *Cruickshanks in Herb. Hookerianum*! Coquimbo, *Lord Colchester*! *Bridges*! Valparaiso, *Cuming*, n. 764! *Gaudichaud*, n. 222 in parte (c. *A. ochroleuca* commixt., sub nom. *A. grandiflora* distrib.)! *Bertero*, n. 60! *Edmonstone*! *Ph. Germain*! *Moseley*! Lampa ("Cardo blanco" incol.), *Herb. Reed*! Quilotta, *Ph. Germain*! *Bertero*! St. Jago, *C. Gay*, n. 206 in parte (c. *A. ochroleuca* commixt., sub nom. *A. mexicana* distrib.)!

Herbacea, robusta, 45–120 cm. alta; foliis 8–25 cm. longis, 2·5–12 cm. latis; bracteis sub flores 2·5–4 cm. longis, 1·5–2·5 cm. latis; sepalis in var. *typica* et var. *hispida* 2·5 cm., in var. *chilensis* 3·5 cm. longis; cornubus 6–10 mm. longis, 4–6 mm. latis; alabastris 2–2·5 cm. latis; capsula 3–6 cm. longa, 1·5–2 cm. lata; valvis crassis spinis horridis dense obsita (in forma distinctiore var. *typicæ* in Texas et Nova Mexico crescente spinæ medianæ magnopere augmentatæ et ramosæ sunt), seminibus 2·5 mm. latis.

The three forms here grouped under *A. platyceras* are perfectly easily distinguished, and it would be equally satisfactory, so far as the material hitherto sent to Europe is concerned, to treat them as so many distinct species.

The true *A. platyceras* occurs in four more or less distinguishable states:—

α. That with broad sepal-horns, obtusely pointed and herbaceous throughout. This seems confined to Southern Mexico, and has been communicated to Europe by Andrieux, Berlandier, Schaffner, Mehedin, and Bourgeau. The ripe fruits of this form are not quite so densely aculeate as in the other North American forms. This is the true *A. platyceras* of Link & Otto, and is the *A. mexicana* var. *aculeatissima* of Moricand.

β. That with triangular sepal-horns coriaceous towards the sharp point, which ends in a strong spine. This form occurs

throughout Central and Northern Mexico, and in Lower California, extending also throughout Arizona and Southern California. This is the *A. munita* of Greene, but not of Durand and Hilgard.

γ. That with purple flowers, from Southern Texas, which otherwise does not seem to differ from form β. I have not conserved Mr. Coulter's name of *A. platyceras* var. *rosea* for this form, partly because the name is made to include a form of what must be treated as another species, partly because the mere difference of colour does not satisfactorily separate the plant. The name should moreover, if possible, be dropped, owing to the possibility of bibliographic confusion between this plant and *A. rosea* Hook.

δ. That with extremely prickly capsules, the spines of the middle line of the valves being sometimes upwards of 25 mm. long, and much branched. This form occurs in Texas, where it was collected by Trecul near New Braunfels, and by Drummond; it forms part of the *third* communication by this unfortunate collector to Sir William Hooker, and therefore, though the specimens have no field-ticket, we know from the historical account in the *Bot. Misc.* that the specimens were collected somewhere to the north-west of Austin, between the Brazos and Colorado rivers. In Herb. Kew Mr. Planchon has proposed to consider this a distinct species, and, had the plant been European, I should have felt little hesitation in suggesting its distinction as *A. Planchonii;* as it is, the matter must be left to American botanists to decide, and I leave the form for the present in *A. platyceras*, of which it has the foliage and the flowers. It has escaped notice that this particular plant has been mixed with *A. hispida* from the beginning, although it is not hispid, for Gray's original description covers the characters of fruit met with in this plant. In Herb. Kew, Herb. Paris, Herb. Drake, Herb. Cosson, Herb. Durand, Herb. DeCandolle, there are only flowering examples of Fendler n. 16, on which *A. hispida* is based. All these are hispid specimens, and all belong to the plant described here as var. *hispida*. The only fruiting example of Fendler n. 16 that I have seen is in Herb. Brit. Mus., and it is *not* the same as the flowering plant; it is this densely aculeate (but not hispid) plant with branching spines on the capsules.

In Herb. Durand there are good New Mexican examples of the true *A. hispida* in fruit. These show that that plant, at least normally, has fruits indistinguishable from those of the North Mexican and Californian form of *A. platyceras*, which are well represented, in fig. 86 B of Prantl and Kundig's account of the order *Papaveraceæ*, under the erroneous name of *A. mexicana*. The confusion that has existed among these forms has been extreme, and the only American authors who have appreciated the differences between these forms have been Mr. Colville, whose synonym *A. platyceras* is the only one by any North American botanist that applies without qualification of any kind to Link & Otto's plant; and Mr. Greene, who has definitely separated *A. platyceras* from *A. hispida* in his *Flora Franciscana*. But Mr. Greene has given the name *A. munita* of Durand to the plant common in Southern California; this is not admissible, because I believe that the

Californian plant cannot be separated from *A. platyceras* proper. Even if it were possible to treat form *β.* of typical "*platyceras*" as a species, the name *A. munita* would still be inapplicable. From the figure and the description of Durand's plant it is certainly not possible to differentiate it from *A. platyceras;* the description does not mention, and the figure does not show, hispidity. Besides, Durand's plant came from California, and, as Mr. Greene justly points out, on that side of America *A. hispida* is confined to the Great Basin, and does not "overflow" into the true Californian region. However, we find that the exact locality of Durand's plant is Williamson's Pass, leading from the Great Basin to the Ranchos of San Francisquito, so that we may as readily suppose it to have been the "Great Basin" plant as the Californian one. We know, moreover, that Lemmon has collected the hispid plant in Mono Pass. The matter is, however, set finally at rest by an examination of Durand's own herbarium in Herb. Paris. Not only has he written the name "*A. hispida*" on his copy of *Pac. R. Rep.* v. t. 1; he has placed this plate in the same specific cover with a specimen of Fendler n. 16 and with specimens of the same hispid plant, collected by Kern and by Bell in New Mexico; more important still, he has in the same cover a piece of the plant collected in California by Heerman. This specimen *is* hispid, it has petals rounded at the tips, and is in fact the same plant as is represented by the flowering specimens of *A. hispida* (Fendler n. 16). The name *A. munita*, therefore, *does not apply* to the plant so designated by Mr. Greene. While it is true, as Mr. Greene points out, that on the Californian side *A. hispida* does not leave the "Great Basin," this is not the case on the eastern side, where it extends beyond the limits of the Rocky Mountains into the plains of Wyoming and Colorado, so that it interosculates there with the form of *Argemone* characteristic of the western prairies. The bibliography of that plant will show that *in that area* no attempt has been made to differentiate the two plants; the glabrous plant that is in this paper referred to *A. intermedia*, of which species it seems to be only a form, has even been figured under the name *A. hispida.* It is once more the duty of American botanists to decide whether it is possible to keep *A. platyceras* (*hispida*) and the very different form here included in *A. intermedia* specifically *apart;* if this is found impossible, it will then probably be necessary to merge *A. intermedia* and *A. platyceras* alike in *A. alba.*

As regards var. *chilensis*, separated, with a good deal of reason, as a species both by Sir Wm. Hooker and by Otto and Dietrich, an examination of the original specimen on which *A. rosea* Hook. was founded shows that it is only a hispid example of the plant described two years later as *A. Hunnemannii* Otto & Dietr.; these two are not even varietally separable. The name *A. rosea* must therefore be used for the Chilian plant, if it is to receive specific rank. This name does not, however, really indicate the colour of the flowers; even in the original specimen they appear to have been white; they are exactly like those of examples noted as white in the field, and the specimens from the Sandwich Islands, included by Sir W.

Hooker in his *A. rosea*, have white flowers. But I cannot follow these authors in giving this plant more than varietal rank. Its very large sepals and large oblong buds certainly render it very easy, apart from its geographical separation, to distinguish this from the other white Argemones. But it has the habit and the capsules of the form of *A. platyceras* characteristic of Southern Mexico, and has petals a little larger than, but of the same shape as, those of *A. hispida*. The fact also that the presence of *A. ochroleuca* in S. America seems probably due to introduction by Spanish missionaries from Mexico renders it not improbable that this white form of Chili is also an introduction, and that its differences are merely the result of altered environment on what appears to be a species naturally very prone to react to the influences of soil and climate.

The name *chilensis* has been given to this variety in order to prevent confusion. As has been said, if it is to be recognised as specifically distinct, its name must be *A. rosea* Hook., in spite of the probability that the flowers are rarely, if ever, pink. At the same time it cannot as a variety be named *A. platyceras* var. *rosea;* that combination of epithets is preoccupied, owing to its use by Coulter to designate a *mélange* of the purple-flowered form of *A. platyceras* (*typica*) and the pink-flowered form of *A. intermedia* (*typica*). To give the name *Hunnemannii* to the variety might seem like suggesting that the name of Otto and Dietrich should be preferred to that of Hooker; the one here adopted has consequently been employed.

A. platyceras type was introduced into European gardens in 1827, and flowered that year in Berlin. The Chili plant was introduced in 1833, and was also raised at Berlin; neither has been preserved in European culture. *A. hispida* and the form of *A. platyceras* with branched spines, from Texas and New Mexico, have never been introduced.

NOTES ON POTAMOGETONS.

By Arthur Bennett, F.L.S.

In the account of the Indian species of the genus in the *Flora of British India* (vi. 565–7), Sir J. D. Hooker intended to give only the "broad species," leaving the local forms and subspecies, &c., to be worked out when more material had accumulated. So far as I have seen, there are fewer number of specimens from India in herbaria than from any other similar space in the world. I make a note here of a few records additional to those in the *Flora*, as a contribution to some future detailed account of the genus as it occurs within the limits of the work.

Potamogeton densus L. Himalaya, Kumaon. It occurs in Siberia (*Herb. Schreber* !), Afghanistan (*Herb. Munich* !), and Kurdistan, Armenia, Anatolia (*Herb. Boissier* !).

P. FLUITANS "Roth." Specimens probably of this (certainly not *P. natans* L.) occur in Sikkim, *Hook. & Thomson*, 9000 ft. (*Herb. Vienna* !); "India," *Herb. Wright* 1212 *in Herb. Glasgow.*; Punjaub.

P. RUFESCENS Schrad. Tibet; Nag-hoti, 15,000 ft., *Strachey & Winterbottom*, No. 3. In neighbouring countries it occurs in Afghanistan, according to Boissier's *Fl. Orientalis;* Davuria, *Turczinow.*

P. ZIZII Roth. Occurs in Kashmir, *C. B. Clarke*, 5150 & 29139 (*Herb. Vienna* !); *Jacquemont*, No. 393 (*Herb. Kew* !), and No. 613 (*Herb. Paris* !); Himalaya, 6400 ft., *Strachey & Winterbottom* (*Herb. Kew* !); Tibet, *Hugel* (*Herb. Vienna* !). It also occurs in Turkestan (*Herb. Petrop.*) and China, *Abbé Delavay* (*Herb. Paris*).

P. DECIPIENS Nolte. Nynee-Tal. 5, 1845, *Griffith* (*Herb. Kew* !). This and Dr. O. Duhumberg's 1881 gathering in *Pl. Altaicæ* are the only Asiatic records I possess.

P. PRÆLONGUS Wulfen. Mr. H. C. Watson in *Comp. Cybele Brit.* p. 314 (1869), gives this as a plant of the Himalayas. I do not know where he obtained this record. The only part of Asia I have seen it from is Japan, where it occurs in a few lakes, gathered by the Abbé Faurie in 1889 (*Herb. Paris*); and it is reported from W. Siberia.

P. FILIFORMIS Nolte. Shardo, *C. B. Clarke*, at 7700 ft., No. 30502; Gwalior, *C. Maries*, 1890 (*Herb. Mus. Brit.* !).

At page 567 Sir J. D. Hooker has curiously misplaced "subsp. *flabellatus*" under *P. pusillus;* of course he meant it to go under *P. pectinatus.*

I find in the herbarium of M. Casimir DeCandolle specimens of *P. polygonifolius* Pourr. var. *pseudo-fluitans* Syme, under the name of "*P. natans* L. var. *intermedius.*" These specimens were sent to M. DeCandolle by Koch in 1824, and he speaks of them as being the plant described in Köhling's *Deutschl. Flora*, ed. 3 (which was edited by Mertens & Koch), page 836 (vol. i., 1823). Although *polygonifolius* had been separated from *natans* by Pourret, Viviani, Batard, and others at this time, still it was generally placed under *natans* as a variety; Chamisso's adoption of it as a species was the first real contrasting of its differences, &c., from *natans.* The extreme tenuity of some of the lower leaves is well shown in these examples; they will scarcely bear breathing over without being disturbed. Chamisso seemed to be uncertain as to where this form should go, he evidently having seen no specimens.

The DeCandollean herbarium also contains a complete set of the species and varieties of the 3rd ed. of Köhling's *Flora*, contributed by Dr. Koch in 1824, with references, to the *Flora;* a very valuable series.

In fasc. 119 (April, 1894) of the *Flora Brasiliensis*, Dr. K. Schumann describes the Brazilian Potamogetons, and figures four species. He admits *P. fluitans* Roth as a species of Brazil, and describes the fruit, evidently, from his note, not thinking that there are two plants under this name, but considering that the vegetative power may in some cases exceed the fruit-forming power. I must admit that I am not sure of any specimens of *fluitans* in *mature* condition out of Europe that have *not* fruited. The way to settle this point would be to transplant a specimen of what we here call a hybrid, plant it in a hot country, and see the result.

In his synonymy under this plant, he gives *P. pumilus* Wolfg. This is an error; I have seen an original specimen, and it is *P. Claytonii* Tuckerman. He also queries *P. Nuttallii* Cham. as the same; this is not so; it is either (as I think) *P. Oakesianus* Robbins or, as Dr. Morong supposed, *P. Claytonii.* The other synonyms he gives it is possible to dispute at all points; they are "good species" to many botanists, to others not even varieties.

I am doubtful whether his *P. stenostachys*, t. 119, f. 1, is not another variety or subspecies of the aggregate *fluitans.* The "small red fruit" can, I think, be matched, but I have not seen his specimens.

Neither have I seen his *P. sclerocarpus*, figured on t. 120, f. 2. With it he figures *P. polygonus* Cham., and the two look much alike, except that *sclerocarpus* has floating leaves, which the other is not known to possess. We do not seem to possess in Great Britain either of Riedel's numbers that he quotes for the two new species.

I have never been able to assure myself that Gardner's No. 2756 could possibly be referred to *P. lucens* L., as Dr. Schumann supposes. Of course it comes under that species as an aggregate, but its habit is different from any other *lucens.* Doubtless it may be said that the tropical part of Brazil whence it comes may alter its habit considerably by the highly heated water it grows in. I believe now that I led Dr. Schumann into the error of supposing that *P. Gaudichaudii* Cham. was conspecific with *lucens.* I now quite believe it to be the *P. mucronatus* of Presl in *Epim. Bot.* (1849), and the fruit of this and the peculiar conformation of the leaves are so different from typical *lucens* that I cannot conjoin them together. Dr. Morong, when describing *P. Wrightii* (believing it to be undescribed), says that the fruit is the most distinct he has seen. *P. Ulei* Schumann (*Ule*, No. 1919), "Santa Catherina," he does not figure, but compares it with *P. ochreatus* Raoul of N. Zealand. I do not think we have anything in our herbaria that can be placed to his plant, unless it has been received quite recently.

P. pusillus L. With most of the names he places under this I agree, but *P. denticulatum* Link, notwithstanding what Reichenbach says in his *Icones*, must go to *P. trichoides* Cham. rather than *pusillus.* Dr. Schumann reduces *P. tenuifolius* Phil. ined. (= *P. Aschersonii* mihi) to a var. of *pusillus.* If one considers the evolution of the beak of this plant and *pusillus* (just as Dr. Schumann figures those on t. 120, f. 1 *fr.*, fig. 2 *fr.*), then they are distinct as subspecies anyhow; but this will vary on the same spike. The specimens are so scarce, and none too good, that it is difficult to get enough material to dissect a number of fruits.

Dr. Schumann's *P. pectinatus* is an aggregate species embracing the five-leaved genuine form of the Linnean herbarium, to the stout *zosteraceus* of Fries, and the *Vaillantii* of Roemer & Schultes. He adduces *P. trichoides* as an analogous species, in which the fruit differs considerably; this certainly is so, as between the type as figured by Chamisso (and his specimens at Berlin) and the var. *tuberculosus* of Reichenbach all sorts of forms between can be found. Under *P. pectinatus* he also places *P. strictus* Phil. *Fl. Atacam.* 358, and describes as a new species (*P. aulacophyllus*) Hieronymus and Niederlein's No. 226; unless I am greatly mistaken, these are simply the same plants. I had the latter plant some time with no name, but directly Prof. Philippi sent me his *P. strictus*, I at once named Hieronymus and Niederlein's specimens as such. They remind me much of the *P. marinus* L. var. *Macounii* Morong, from Canada.

Under *P. pectinatus* L., Dr. Schumann also cites "*P. indicus* Roxb. *Fl. Ind.* i. 452." I cannot imagine the cause of this extraordinary mistake. We have the original specimens in England, and it belongs to *P. Roxburghianus* Schult. *Mant.* iii. 367 (1827); *i.e.*, the Indian plant with submerged leaves like *lucens*, and floating ones like *fluitans* or *natans*.

Under *P. striatus* Ruiz & Pavon he cites Spruce's No. 5886 for the Andes of Ecuador. This is not the species of Ruiz & Pavon, but is conspecific with *P. australis* Philippi ined.

Two other stations for Brazil may be added to those enumerated by Dr. Schumann; *i.e.*, "Organ Mountains, Prov. R. d. Janeiro, *Miers*, No. 4230," *Herb. Kew;* "Colonie Theresoply, Prov. R. d. Janeiro, 9, 1892," *Fr. Wernerley in Herb. Zurich*!

I have a note of having seen a specimen of *P. pauciflorus* Pursh, from the Brazils, but unfortunately no reference to where. The most southern station I know for this species is Porto Rico, about 18° N. lat., and Mexico, about 23° N. lat., the former being very near the same latitude as it occurs in the North Pacific Ocean, *i.e.*, the Sandwich Isles. Even if correct, I know of no connecting stations in Granada, Venezuela, or Guiana.

I have also a note of having seen *P. striatus* Ruiz & Pavon from Chili, but Prof. Philippi tells me he knows nothing of that species as a Chilian plant.

Among the synonyms placed under *P. lucens* L. is the rather startling one of "*P. sparganifolius* Fr."; I think this decidedly an error, and that Fries's plant, whatever its grade may be, is essentially nearest to the *natans* group.

REPORT OF DEPARTMENT OF BOTANY, BRITISH MUSEUM, 1894.

By William Carruthers, F.R.S.

The Herbarium was enriched by the presentation by Mrs. Hassall of the collection of Fresh-water Algæ which belonged to her late husband, Dr. Arthur Hill Hassall, author of the "British Fresh-water Algæ." This collection contains, as far as they have been preserved, the types of Dr. Hassall's work; their acquisition is the more important as they must form the basis of any critical revision of these plants.

The additions to the collections by presentation have consisted of 1815 plants from Malaya, by H. N. Ridley, Esq.; 384 plants from Canada, by the Director of the Geological Survey of Canada; 261 plants from Borneo, by Dr. Haviland; 133 plants from Penang, by Mr. Curtis; 156 plants from Arabia, collected in the Bent Expedition, from Mr. Bent; 129 plants from Jamaica, by Mr. Fawcett; 58 plants from Greenland, by the University of Copenhagen; 27 plants from Nyasaland, collected by Mr. R. Crawshay, by Dr. Sclater; 14 species of orchids and 42 specimens of pitcher plants, from Messrs. Veitch & Sons; 22 plants from Australia, by Baron von Mueller; a new species of *Abutilon* from India, by the Director of Kew Gardens; 10 specimens of New Zealand plants, by Mr. H. O. Forbes; specimens of *Gossypium Stokesii*, by Dr. T. Cooke; 7 species of cultivated orchids, by Miss Woolward; a new species of *Sphæralcea*, from Mr. J. N. Rose; 46 specimens of Algæ from Natal, by Maurice S. Evans, Esq.; 11 specimens of West Indian Fungi, by W. R. Elliott, Esq.; 57 specimens of Marine Algæ from the Cape of Good Hope, from W. Tyson, Esq., and 5 species from the same locality, by Major Reinbold; 31 Fungi from North Italy, from W. W. Strickland, Esq.; 21 species of Algæ from Greenland, from the Botanical Museum, Copenhagen; 62 Cellular Cryptogams, from the Director of the Botanic Garden, Singapore; 26 Cryptogams from Sarawak, from Charles Hose, Esq.; 30 species of Mycetozoa, from Professor McBride; interesting Cryptogams, from Graf zu Solms-Laubach, Mr. Weber von Bosse, Dr. Bommer, and others; 7 slides of *Diatomaceæ*, collected by Sir Joseph Hooker in India, from the Director of Kew Gardens; and 17 Algæ, collected in the Bent Expedition to Arabia, from Mr. Bent.

The following additions have been made by presentation to the British Herbarium:—753 specimens, from the Rev. W. Hunt Painter; 22 species, from Mr. A. W. Bennett; specimens of *Cyperus fuscus*, from Hampshire, from the Rev. W. R. Linton; specimens of *Carex incurva*, from Holy Island, from Professor Oliver; specimens of *Astragalus alpinus* and *Menziesia polifolia*, from Scotland, from Mr. A. B. Hall; specimens of *Erodium*, from Ireland, from Professor Perceval Wright; specimens of *Trichomanes radicans*, from Monmouthshire, from Mr. W. Robinson; 39 specimens of Marine Algæ, from Professor Johnson; 71 specimens of Algæ, and 12 Fungi, from Miss A. Lorrain Smith; 18 specimens of Fungi, from the Hon. Mabel de Grey; and interesting specimens from David Robertson, Esq., Dr. Masters, Professor Stewart, Messrs. J. Saunders, George Brebner, T. W. Powell, W. Herring, W. Whitwell, W. G. Smith, W. R. Ogilvy Grant, and W. H. Pearson.

The following additions have been made by exchange for duplicates:—108 microscopic preparations of British Hepaticæ, from Miss Tindall; 308 species of Tropical African Plants, 48 species from Japan, and 292 Cellular Cryptogams, from the Director of the Royal Botanical Museum, Berlin; 670 specimens of plants from India and Malaya, from Dr. King, of Calcutta; and 46 Norwegian plants, from T. Wulff, Esq.

The following collections have been acquired by purchase:—

100 specimens of African plants, collected by Schlechter; 315 from Anatolia, collected by Bornmüller; 100 species of European Fungi from Rabenhorst; 161 plants from Bulgaria, collected by Wagner; 96 species from Galicia, collected by Dr. Blöckj; 200 species from Mexico, collected by Pringle; 50 sections of American woods prepared by Hough; a collection of British Rubi, collected by the Rev. E. F. Linton; 46 preparations of British Marine Algæ, by Buffham; 150 Mosses and Lichens, from Canada, collected by Macoun; 200 species of Fresh-water Algæ, from Wittrock and Nordstedt; 350 European Fungi, from Sydow; 25 *Characeæ*, from Migula, Sydow, and Wahlstedt; 100 Fungi of Saxony, from Krieger; 150 species of economic Fungi, from Seymour and Earle; 146 species of Cryptogams, from Brazil, from Mr. Spencer Moore; 100 species of Algæ, from Hauck and Richter; 193 species of Mosses, from N. America, from Waghorne; 400 species of parasitic Fungi, from Scandinavia, from Erikson; 124 species of Lichens, from the collections of the late Rev. M. J. Berkeley; 25 British Algæ, from Holmes; 50 North American Mosses, from Renauld and Carnot; 95 British Algæ, from Buffham; 25 parasitic Fungi, from Briosi and Cavara; 200 species of European plants, from Schultz's Herbarium Normale; 157 plants from Syria, from Post; 116 specimens of Natal plants, from Wood.

There have been added to the collection of prints and drawings of plants 6 original drawings of Malayan plants, presented by Mr. Ridley, and 55 original drawings by Bolton.

SHORT NOTES.

IMPATIENS NOLI-ME-TANGERE IN MONTGOMERYSHIRE. — At p. 117 I showed that, of the two *Botanist's Guide* records for this species under Montgomeryshire, one properly belonged to Shropshire, while the other seemed doubtful, as no place bearing the name Gwern Dhee could be traced near Montgomery town. At the same time I expressed the hope that my correspondent Miss E. Jones, of Montgomery, would succeed in rediscovering both the locality and the plant itself. The hope has been fully realized. Continuing her enquiries, Miss Jones ascertained that there was a farmhouse known as Wern-du near Churchstoke, actually within the county of Montgomery, but four miles from the town instead of one. She visited the spot in August, and at once found the *Impatiens* in fair quantity. It occurs at intervals on the banks of a small brook which runs through a field close to the house. This is half a mile south of Churchstoke village, and the same distance from the nearest point of the strangely irregular boundary-line of Montgomeryshire and Salop. The streamlet runs into the river Camlad a little above Churchstoke. Marrington Dingle is lower down the Camlad. The distance between this, the Shropshire station, and Wern-du is two miles.—WILLIAM WHITWELL.

ARGEMONE HISPIDA (p. 209).—I think that Dr. Prain is mistaken in making *Argemone hispida* a variety of *A. platyceras*. The two species grow in Colorado in many places side by side, and show characters that are unmistakably distinct, and never do they show any tendency to vary towards each other. The differences are not only in the surface of the leaves and stems, but the pods are quite unlike. The specimens of *A. hispida* that are found in California are almost identical with those found in Colorado. If any merging of species is to be done, *A. intermedia* ought to go into *A. platyceras;* but *A. hispida*, never. I have been especially interested in these species, and have had opportunities of studying them in the field for several years. The foliage of *A. hispida* is pale green, densely covered with short crimped bristly hairs, short spines on the margins and veins of the leaves, very dense on the stems. The pod is closely covered with slender bristles of varying lengths, instead of the coarse horn-like spines peculiar to *A. platyceras* and *A. intermedia.* In growth *A. hispida* is more compact, and the flowers are on shorter peduncles; in fact, almost sessile. The seeds of *A. platyceras* have a light-coloured prominent raphe, and the coat is honeycombed. *A. hispida* has a less prominent raphe of the same colour as the coat, which is less deeply pitted; the seeds are larger. The pods of *A. hispida* are invariably oval, and when they dehisce the segments are acuminate. In *A. platyceras* the pods are cylindrical and veiny, and the segments are acute. In regard to the time of blooming: in Colorado, near Denver, the two species are in bloom from the middle of June until the end of September, and I do not doubt but that specimens could be found in bloom in October in some years. The two kinds grow at Denver, Colorado Springs, Pueblo, Trinidad, and I have seen them along the railroad track between those points as I was travelling through. The differences are so plain that I can recognize the two species at a glance, and as far almost as I can see them.—Alice Eastwood, San Francisco.

Carum Bulbocastanum in N. Hants. — On May 6th the Rev. R. P. Murray and I found this plant in some plenty over about twenty yards of ground by the road-side, about half-way between Liss and Petersfield. It was evidently an introduction here, but whether from a distance, or from the neighbouring chalk, we have no means of judging. Further search may possibly show that it is a native of the district.—Edward S. Marshall.

Medicago lupulina var. Willdenowiana (p. 315). — This plant was recorded by me in *Journ. Bot.* 1890, 229, as *M. lupulina* var. *scabra* S. F. Gray, with "glandular hairs on the fruit," from Iffley, Oxford. I have seen it in Berkshire and Devon, and Miss C. E. Palmer tells me she has gathered it near Odiham, in Hampshire.—G. Claridge Druce.

Dorset Plants. — *Filago apiculata* G. E. Sm. occurs on ground gone out of cultivation half-way between Branksome and Parkstone. It has been known for years in the adjoining District I. of the Hampshire Flora, but had hitherto escaped notice in Dorset. *Saponaria Vaccaria* L., very fine and plentiful in a fodder crop of vetches and white mustard on the downs south of Melbury Abbas (near Shaftesbury); apparently introduced with the vetches. *Salix aurita* × *repens* (*S. ambigua* Ehrh.), an addition to the rich and varied flora of Littlesea. My attention was drawn to the bush by Mr. L. V. Lester, who was leading our party at the time, and I saw at once that it was a handsome form of the hybrid with broadly oblong- or obovate-elliptic leaves very soft beneath; a few withered female catkins showed the sex. This hybrid has often been searched for Dorset, but till now I believe in vain. Further on in the same walk we found *Eriophorum gracile* Koch, scattered about a swampy and usually inaccessible scrub, not far from the original locality, where it was also plentiful.—Edward F. Linton.

A Hybrid Poppy?—I enclose a capsule which appears to be that of a hybrid *Papaver orientale* × *P. Lecoqii* Lamotte. The plant was first noticed in flower in the summer of 1894, on a spot where *P. Lecoqii* had grown for several years, about ten yards from an established plant of *P. orientale;* it was watched with some curiosity through the winter, and in 1895 flowered at intervals from May to October; it has since been divided, and the offsets, as well as the old root, are growing satisfactorily. The foliage is like that of *P. orientale*, but on a smaller scale; the flower is also smaller and lighter red, the black spot being generally present, varying in size; the sap is yellow. Although many capsules have been formed, the seed does not seem to mature. *P. pilosum* is growing midway between the supposed parents, but I cannot trace any resemblance to it. The capsule is evidently not that of *P. orientale*, which moreover has white sap in my examples. If my supposition as to the parentage is correct, the seed probably came from the annual, the fertilisation of which, by pollen from the perennial, resulted in the production of a plant which shows no sign of decay after the second year's flowering.—C. Crouch.

NOTICES OF BOOKS.

The Origin of Plant-structures by Self-adaptation to the Environment. By the Rev. George Henslow, M.A., F.L.S., &c. 8vo, pp. xiii, 256. International Science Series. London: Kegan Paul, Trench, Trübner & Co. 1895. Price 5s.

In a book previously published in the same series, Mr. Henslow endeavoured to prove that "the direct action of the environment, coupled with the responsive power of protoplasm," were "the sole and efficient causes" of the origin of floral structures. The object of the present work is to establish the same for vegetative structures, "so that the two books taken together, it is hoped, will furnish a tolerably complete proof of the truth that the origin of all plant-structures issues from self-adaptation to the environment (directly or indirectly), without the aid of natural selection."

"Natural selection plays no part in the Origin of Species"; "The Supposed Requirements of Natural Selection"; "Darwin's Fundamental Error," are the three first headings of Mr. Henslow's introductory chapter, and in them he strikes the key-note of the whole book. The title of this chapter, "On the Origin of Species without the aid of Natural Selection," at once challenges a comparison with the well-known book of six-and-thirty years ago, not altogether to the advantage of the present one. There is something in the style which jars a little. It lacks the modesty of genius. If Mr. Henslow will pardon the expression, he is too cocksure.

As the Introduction is a statement of his case, it may be useful to point out one or two weak places in his line of argument. For instance, on p. 4, he would "strongly emphasize this fact," that the natural selection from a number of seedlings is merely a matter of "constitution"; the stronger survive, the weaker perish: it is quite independent of any "structural differences" arising from the law of variation. Mr. Henslow does not define "constitution," but evidently admits its liability to an indefinite variation, which, however, he quite refuses to accept in points of structure. "I would ask," he says, "if there is any evidence, direct or indirect, that any such trivial morphological differences . . . . are of the slightest consequence to a seedling, so as to enable it to survive in the struggle for life?" We think there are. "Damping off" sometimes plays terrible havoc among seedlings. Is it not possible to imagine that those which survive may do so on account of a slight structural variation in the direction of a thicker cuticle more resistant to the attack of the fungus spore? Branching in the axils of the cotyledons sometimes takes place. This is a morphological variation, and would be of great value in the struggle for light and air, enabling the seedling in which it occurred to overshadow those on either side of it, or, in case of injury to the main shoot, to still continue growth.

"A seedling survives among others solely because it is vigorous. This is capable of proof." The proof given is that "larger and better nourished 'seeds' have a much greater facility in starting, and soon crowd upon the rest by growing more quickly into larger plants." But this simply means that the indefinite variation which obtains among the seeds of a capsule exercises an important influence on the survival or death of the seedling. Variation in "vigour" is probably a variation in the amount of endosperm (*i.e.*, in the size of the asexual plant-body, if we grant the somewhat doubtful relation between the endosperm of an angiosperm and the fern prothallium), or the thickness of the seed-coat or some other structural character.

In support of his contention that morphological adaptations arise "solely through the direct action of the new environment," the author cites the manner of growth in desert plants, "dotted about, never forming large masses." "There is absolutely no struggle at all with each other; but the struggle is all against the physical difficulties of soil and climate." But this is not the only conclusion possible. Does only one seedling come up for each of the isolated adults? Or are the fertile spots those which are sufficiently favoured in some condition of soil or moisture or shelter to make growth possible? And is Mr. Henslow certain that no struggle between individuals takes place on these little oases?

"Variations do not arise accidentally or spontaneously in nature, as long as the same environment is maintained." Has Mr. Henslow studied Potamogetons? Is not a water environment more constant than a land one? and yet several genera (e. g., *Naias*, *Potamogeton*) afford excellent examples of variation among mature individuals. Perhaps Mr. Henslow falls back on the hybrid theory, though we do not remember to have come across it in his book. Among a number of plants growing together, *e.g.*, chicory by the side of a field, *one* will produce a white flower. It will be at least as difficult to prove that this is due to a change in environment as that it is a mere accidental variation.

The author also adduces as evidence the occurrence in Malta (*i.e.*, a changed environment) of forms or varieties of British species; and instances (p. 21) four forms of chickweed which differ in the relative size of petals and calyx and the number of stamens. Here again the argument is extremely incomplete, and may be used against Mr. Henslow. Do all these four forms grow in similar localities, or in those sufficiently different to afford the required change of environment? This should have been stated. On the next page he says, "The question as to one variety issuing from a species in the same environment may be shown to be a *reductio ad absurdum*," by taking extreme cases. But it is equally absurd to imagine a change of environment from Britain to Malta giving rise to four forms in which the stamens vary in number between two and ten, and the petals from complete absence to a size which has called forth the term "*grandiflora*." If variation is quite definite, and only a response of the protoplasm to the environment, how is it that in the same environment we find, for instance, such very different adaptations as those occurring in the desert—large succulent leafless cacti or euphorbia, hard dry woody spiny glabrous acacias, or densely hairy species? Or, on the other hand, the same response under such totally opposite conditions as desert and water—for spiny leaves are very characteristic of water plants (e. g., *Lagarosiphon*, *Hydrilla*, *Elodea*, *Naias*, &c.).

Mr. Henslow's little book is of value in that he has brought together a large number of facts illustrating the structural peculiarities of desert (already published in the *Journal of the Linnean Society*), alpine, arctic, aquatic, or climbing plants, and also the existence of a certain plasticity in plants; but we cannot hear in it the death-knell of Natural Selection. Mr. Henslow's difficulty is that you cannot see Natural Selection working. But this is no proof that it does not work.

A. B. Rendle.

An Introduction to the Study of Sea-weeds. By George Murray, F.R.S.E., F.L.S. 8 coloured plates and 88 other illustrations. Pp. xvi, 271. Macmillan & Co. 1895. 7s. 6d.

During the fifty years which have elapsed since the publication of Harvey's great work—*Phycologia Britannica*—great advances in the knowledge of British and other sea-weeds have been made. Not all would-be students are able to consult the continental works where many of these advances are embodied, and there was great need of a reliable guide, in which the present state of our knowledge of sea-weeds should be adequately represented. Such a book we have in this *Introduction.*

The work, while permeated, and justly, with the results of foreign (including American) investigations, is an English one, and is a welcome and worthy addition to our stock of home-made botanical books. There has been in Britain, during the last few years, a marked revival in the interest taken in the study of sea-weeds. This revival is a happy combination of that old natural history spirit which led its disciples to the sea-shore, there to study the objects of nature *in situ*, and of that modern spirit which is not satisfied without a more intimate acquaintance with the objects of its study, an acquaintance only gained by the use of the compound microscope and razor. In this revival the author has taken a leading part, not only by his own investigations and expeditions, but by the facilities which he has afforded students, in the Cryptogamic Department of the Natural History Museum (British Museum), and by his utilization of the trained powers of willing students from the London College of Science and elsewhere, to whom due acknowledgment is made in the text.

In the introductory chapter of the book we have, after a short historical statement, a general account of the distribution, in time and space, of sea-weeds, their structure, collection, preservation, and economic uses. In this last connection the importance of the floating forms (paukton), such as *Halosphæra*, is rightly emphasized, at the same time that the ignorance of, and blameworthy indifference to, their life-histories is deplored. Following on the Introduction we have a useful bibliography, in which the translation of Solms-Laubach's *Palæontologie* and of Schmitz's *Untersuchungen*, as well as a fuller reference to the investigations of Holmes and Batters, to whom British algology owes so much, might have been included with advantage. The *Phæophyceæ*, or brown sea-weeds, are first described, eighty pages being devoted to them. Justice is done to most of the more recent investigations. The difficulty of keeping a book of this kind up-to-date is illustrated by the interesting *Tilopterideæ*, the account of which will need considerable modification, owing to Kuckuck's investigations of the swarm-spores, published quite recently. We think the *Ectocarpaceæ*, the last group of *Phæophyceæ* considered, should have received earlier and fuller treatment.

The *Chlorophyceæ*, or green sea-weeds, are next described. Many interesting forms, especially of the "*Siphoneæ*," in which the author is peculiarly at home, are considered. The use of the term "cell" for such forms as *Valonia* is continued. "Equal gametes," often used, might well give way to "isogametes." (A short account of the terms used, in the Introduction or as a glossary, would add to the value of the book.) A short but interestingly written chapter is next devoted to the *Diatomaceæ*.

The *Rhodophyceæ*, *Florideæ*, or red sea-weeds, follow, fifty pages being devoted to them. The influence of Schmitz, whose premature death came as a personal as well as a great scientific loss, is evident on every page. The greater part of the letterpress is devoted to a description of the different types of fruit (cystocarps), on which the classification of *Florideæ* is now mainly based. A short account of the *Cyanophyceæ*, or blue-green algæ, forms the final chapter, the investigations of Bornet, Flahault, and Gomont being incorporated.

The book is by no means confined to an account of British seaweeds: it appeals also to American and Australian students. It is throughout well-illustrated, though some of the coloured illustrations leave much to be desired. A few slight errors of statement or typography, which need not be enumerated here, should be corrected in a future edition.

While in places the style is somewhat colloquial (*e. g.*, p. 84, "In that case *Chorda* would have to go"), the treatment is generally academic, and does not contain as much "Kernerism" as we could have wished. A more popular and connected account of the transition from isogamous to oogamous reproduction, so well seen in the *Phæophyceæ*, of the perforating or shell-boring algæ (mostly green or blue-green), &c., might have been included. The book gives a comprehensive survey of a branch of natural history not similarly treated in any other work, and can be heartily recommended.

T. Johnson.

ARTICLES IN JOURNALS.

Bot. Centralblatt (Nos. 41–43). — F. Ludwig, 'Ueber Variationskurven und Variationsflächsen der Pflanzen' (2 pl.).—(Nos. 44–47). G. Lutz, 'Ueber die oblito-schizogenen Secretbehälter der Myrtaceen.'

Bot. Gazette (Oct. 17). — R. Thaxter, *Monoblepharis* (1 pl.).— F. C. Newcombe, 'Regulatory formations of Mechanical Tissue.'— E. B. Uline & W. L. Bray, 'N. American *Amarantaceæ*' (cont.).

Bot. Notiser (häft. 5). — J. Erikson, 'Alfvarfloran på Öland.'— J. M. Hulth, 'Om floran i några Kalktuffer från Vestergötland.'— P. H. Olsson, '*Crambe maritima* i Finland.' — G. O. A. Malme, 'Lichenologiska notiser.' — K. O. E. Stenström, 'Tvenne Piloselloider.'

Bot. Zeitung (Nov. 1). — P. Kukuck, 'Ueber einige neue Phæosporeen der westlichen Ostsee' (2 pl.).

Bull. Bot. Soc. France; xlii, 6, 7 ("Sept.-Oct."). — Ph. Van Tieghem, 'Loranthacées' (*Loxania*, *Ptychostylus*).— —. Boulay, 'Subdivision de la Section *Eubatus* Fock. (Rubi fruticosi veri).'— D. Prain, '*Microtoena*.'—P. Guérin, 'Anagyrine et Cytisine.' — J. De Seynes, 'Culture du *Penicillium cupricum*.'—D. Clos, *Arum vulgare & A. italicum*, *Cistus laurifolius*, *Lilium pyrenaicum*. — C. E. Bertrand, 'Julian Vesque' (8 Ap. 1848–25 July, 1895).—L. Lutz, 'Principes actifs dans les Seneçons.'—A. Chatin, 'Terfas du Maroc et de Sardaigne.'

Bull. Torrey Bot. Club (Oct. 31). — G. V. Nash, 'New or noteworthy American Grasses.'—W. A. Setchell, '*Cyanophyceæ* of New England.' — O. F. Cook, 'Personal Nomenclature in the Myxomycetes.'—J. B. Ellis & B. M. Everhardt, 'New Fungi.'

Erythea (Nov.).—A. Eastwood, 'Habits of *Nemophila*' (1 pl.).

Gardeners' Chronicle (Oct. 26).—*Masdevallia Forgetiana* Kränzl., sp. n. *Anæctochilus Sanderianus* Kränzl., n. sp. ?—(Nov. 2). J. G. Baker, 'A hybrid *Musa*.' — R. I. Lynch, *Yucca guatemalensis* (figs. 91–93). — (Nov. 16). *Masdevallia calyptrata* Kränzl.,* sp. n. — (Nov. 23). *Cirrhopetalum Rothschildianum*, n. sp. (no authority cited: fig. 102).

Journal de Botanique (Nov. 1). — A. Franchet, 'Plantes nouvelles de la Chine occidentale' (cont.).—C. Sauvageau, *Dermocarpa biscayensis* & *D. strangulata*, spp. nn.—(Nov. 16). E. Bonnet, 'Géographie botanique de la Tunisie' (cont.). — A. de Coincy, 'Hétérospermée de certains *Æthionema* hétérocarpes.'—L. G. de Lamarlière, 'Cryptogames vasculaires du Nord de la France' (cont.).

Journ. Linn. Soc. (Botany, xxxi, Nos. 212, 213: Nov. 4). — D. Brandis, 'An Enumeration of the *Dipterocarpaceæ*' (3 plates).

Oesterr. Bot. Zeitschrift (Nov.).—E. V. Halácsy, 'Zur Flora von Griechenland' (cont.).—J. v. Sterneck, '*Alectorolophus*.' — J. Ullepitch, 'Zur Flora von Tatra.'—J. Murr, 'Ueber mehrere Kritische Formen der *Hieracia*.' — J. Freyn, 'Plantæ Karoanæ' (cont.).—K. Schilberszky, 'Biologie der Diatomaceen.'

BOOK-NOTES, NEWS, &c.

Dr. Paul Howard MacGillivray, who died in Bendigo, Victoria, on July 9th, and who left Scotland in 1855, was the author of a Catalogue of Aberdeen plants, published in 1853, but does not appear to have followed botanical pursuits in the land of his adoption. He was born at Aberdeen in 1834, his father being Prof. William MacGillivray, best known to botanists in connection with the one-volume edition of Withering's *Botanical Arrangement*. The *Annals of Scottish Natural History* for October (p. 262) gives further particulars.

Many friends of the late A. G. More wish to see a short memoir of him published. Any one having letters or papers of interest would greatly oblige by lending them for selection to his sister, Miss More, 74, Leinster Road, Rathmines, Dublin.

Dr. H. Marshall Ward has been appointed to succeed the late Prof. Babington as Professor of Botany at Cambridge.

We have received the first part of the *Synoptical Flora of North America*, which includes the orders *Ranunculaceæ* to *Frankeniaceæ*. We are glad to observe that it has not been thought necessary to adapt the nomenclature to the newest transatlantic fashions; in this matter Dr. Robinson, the editor of the part, has followed the traditions of Asa Gray and Sereno Watson, whose names appear as authors, and who elaborated many of the orders. We hope to notice the work at greater length.

Dr. Otto Kuntze has reprinted from *Le Monde des Plantes* an interesting paper on "Les Besoins de la Nomenclature Botanique," in the course of which he discusses the possibility of a Congress on the subject to be held in Paris in 1900, and to be followed by a "Nomenclator Plantarum Omnium," to be edited by himself, appearing in 1905.

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* Name also spelt "*eclyptrata*" on same page.

A complete series of the British Mycetozoa, beautifully illustrated with water-colour drawings of generic types, has been presented by Mr. Arthur Lister to the British Museum. It is exhibited in the Botanical Gallery, and a *Guide* to the case, also prepared by Mr. Lister, has been issued (price 3d.), containing short descriptions of all British species, and woodcut illustrations of the genera.

Dr. Robert Brown, F.L.S., who died at Streatham on Oct. 26th, was born on March 23rd, 1842, at Campster, Caithness. He completed his education in the University of Edinburgh, and afterwards studied at Leyden, Copenhagen, and Rostock, from the last of which he received the degree of Ph.D., his thesis being on North American species of *Thuja* and *Libocedrus*. In 1861 he visited Jan Mayen, Spitzbergen, Greenland, and the western shores of Baffin's Bay, discovering the now universally-admitted cause of the discoloration of the Arctic Ocean; his paper on this will be found in this Journal for 1868, pp. 76–84. Between 1863–66 he travelled in many of the least-known parts of America, and some of the Pacific Islands, as botanist of the British Columbia Expedition and commander of the Vancouver Island Exploring Expedition. The scientific results of these journeys were published in British and foreign journals. In 1867, in company with Mr. Edward Whymper, he visited Greenland, subsequently publishing an account of his voyage in *Trans. Bot. Soc. Edin.* ix. 430–465, under the title "Florula Discoana"; this included a list, drawn up by various botanists, of the plants which he collected. He resided for some years in Scotland, holding various lectureships, and it was during this time that he published his not very satisfactory *Manual of Botany* (1874), which is noticed at some length in this Journal for that year. In 1876 he came to London, since which time he devoted himself to general literary work, for which he was well fitted by his numerous travels and varied talents. His principal contributions to botany were published in the *Transactions* of the Botanical Society of Edinburgh, and include papers on the flora of Caithness, and descriptions and observations on *Thuja* and *Libocedrus*. In *Ann. Mag. Nat. Hist.* vii. 240–255 (1871), he published descriptions of new oaks, abbreviating his name, in accordance with the suggestion of Alphonse DeCandolle, "R. Br. Campst.," the last syllable referring to his place of birth: he had previously adopted "R. Br. Min." (see *Trans. Bot. Soc. Ed.* ix. 377, footnote). It may be noted that he is doubly entered in the Royal Society's *Catalogue of Scientific Papers*, the "Robert Brown" who appears second on p. 661 of vol. i. being identical with the "Brown, Robert (*Campsterianus*)" of vol. vii. 279. His name is commemorated by *Aralia Browniana* (fossil), *Verrucaria Campsteriana*, and *Lecidea Campsteriana*, and by Brown's Range and Brown's River in Vancouver Island, and Cape Brown in Spitzbergen.

We are glad to note that two local Scottish floras are announced for early publication—Dr. Buchanan White's *Flora of Perthshire*, which Prof. Trail will edit, and Mr. Scott Elliot's *Flora of Dumfriesshire*.

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